18-6

June 1951

copy 2

25¢

Organic Gardening

Gardening without Commercial Fertilizers

LIBRARY
DEC 26 19

THE MAGAZINE FOR DISCRIMINATING GARDENERS

J. H. McFarland Co.

Native Shrubs and Trees for Ornamental Planting

SNOWDROP or SILVERBELL TREE

Halesia Carolina L.

GROWING on the banks of streams from Virginia and Illinois south to Florida is the beautiful Snowdrop or Silverbell tree. This small tree bears clusters of white bell-shaped flowers which appear with the leaves, but on the twigs of the previous season. The pendant white flowers which clothe the branches in spring make the Silverbell one of the loveliest of small hardy trees. The fruit is an oblong, rather fleshless dry drupe. By proper pruning, this small tree can be kept small in the home grounds.

AGROMAT
GARBAMAT

MAKES IN 15 MINUTES
READY-TO-USE
FULL OF NUTRITION

Fluid ORGANIC
F-A-MULCH
Excellent Fluid Mulch

FAM *is poured on the ground . . . leaves a protective cover*
for a *WEEDLESS, WORKLESS* GARDEN

4 MODELS and PRICES

the **GARBAMAT-**
for HOME USE
for HOME & GARDEN

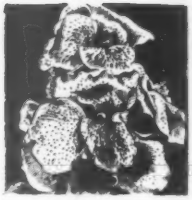
the **AGROMAT-**
for the SMALL GARDEN
for the LARGE GARDEN
and ESTATE

FAM *produces sensational results-*
we guarantee complete satisfaction
. . . send for details

WANDEL MACHINE CO. Inc.
DOWNINGTOWN · PENNSYLVANIA
— Visit us any time —

Organic Gardening

VOL. 18, NO. 6 JUNE, 1951



IN THIS ISSUE

EDITORIAL

Teeth and the Organic Method ..... 16 J. I. Rodale

GENERAL

Care of Roses ..... 19 Fanny Wickes Parsons
Hunza, the Land and the People 21
The Proof of the Pudding ..... 22 Jeanne P. Rindge
Chinese Cabbage ..... 24 Dr. Lewis E. Theiss
Are Bees Safe? ..... 26 John E. Eckert, Ph.D.
Consider the Earthworm ..... 28 Charles E. Booth
Spray off the Bark ..... 30 James S. Ayars
Magic of Compost and Mulch ..... 31 Edwin H. Abrams
Flowers of the Wind (Anemone) ..... 32 G. L. Wittrock
The Vegetable Garden (Part V—The Natural Control of Pests—Concluded) ..... 34 William H. Eyster, Ph.D.
Celery ..... 36 James G. Esson
The Effects of Chemical Fertilizers ..... 39 William H. Eyster, Ph.D.
Liquid Manure Tips ..... 41 Myron Parish
Tradescantia ..... 52 Julie Bedier
The Case Against DDT ..... 53 Ruth Rodale
Regenerated Garden ..... 58 H. B. Harris

DEPARTMENTS

Native Shrubs and Trees—Silverbell Tree ..... Inside Front Cover
Forum 3
What's New 12
Miscellany ..... 42 J. I. Rodale
Garden Gadget—Tree Trunk Guard 45
Garden Calendar ..... 46 William H. Eyster, Ph.D.
Book Reviews 49
Research in the Organic Method ..... 50 Ruth Rodale
Garden Hints 51
Questions and Answers 59
June is for Brides ..... Inside Back Cover Ann Andrews Rodale

Published monthly by ORGANIC GARDENING, Publication, Executive, Editorial and Subscription Offices: 6th and Minor Streets, Emmaus, Pa. Advertising Offices: 46 S. West St., Allentown, Pa. Subscription Rates, United States and Possessions, One Year $3.00, Two Years $5.00, Three Years $7.00, Five Years $10.50. Unless otherwise directed all subscriptions begin with the current issue. Renewal subscriptions begin immediately after old subscription expires. When changing an address, give the old address as well as the new. Manuscripts should be accompanied by full return postage and a self-addressed envelope. Printed in the United States of America.

Copyrighted 1951 by ORGANIC GARDENING.

Entered as second class matter January 27, 1943, at the Post Office at Emmaus, Pa. under the Act of March 3, 1879.

STAFF

J. I. RODALE
Editor and Publisher

DR. WILLIAM H. EYSTER
Managing Editor

RUTH RODALE
Assistant Editor

KARL MANAHAN
Art Director

ANN ANDREWS RODALE
Flower Arrangement Editor

JAMES W. CRAWFORD
Advertising Manager

VERNICE KEMMERER
Asst. Advertising Manager

NEXT MONTH

Pay Dirt in Japan

When to Pick Vegetables for Most Vitamins

Roses the Organic Way

Companion and Succession Crops in the Vegetable Garden

Fuchsias in California

THE COVER

Only in an artist's imagination could there exist the fanciful sundial depicted in this month's symbolic illustration. "Anything New Under the Sun?" was drawn for ORGANIC GARDENING by Arno, whose work also appeared on our March and April covers.

THE FORUM

Turkey Wastes as Composting Materials

I was pleasantly surprised to have my brother finally admit to me this morning that there was definitely something to this composting business. I have had a hard time weaning him away from artificial fertilizer, but the process is almost completed. I can assure you that it is most satisfying to have converted another to more healthful farming. What brought his conversion around was a result of his experience with the remains of the dead turkeys he occasionally had to dispense with. You see he is in the turkey business and farms some on the side. It was his practice in the past to throw the inevitable losses into a hole in the fields and cover them with dirt. Not having practiced organic farming his soil was not in a condition capable of properly consuming these carcasses so when he resumed his plowing at a later date he was continuously unearthing turkey bones. After reading *The Organic Front*, he decided to try composting them in a pile together with cow and turkey manure along with waste green material. He was flabber-gasted to find not only the flesh, but the bones as well, completely consumed in a short time.

Alton Eliason
2399 Whitney Ave., Hamden 14, Conn.

Community Demonstration

The South Jersey Organic Gardening and Farming Club has found an artful way to get the organic word around a listless town! We held a public demonstration of compost-making last Saturday afternoon, and gave it all the publicity our local newspapers and radio stations would allow. But probably our best publicity was obtained by guileless members who called on hairdressers for human hair; breweries for spent grain and yeast; supermarkets for vegetable trimmings; householders for vacuum emptyings and lawn rakings; nearby farmers for straw and manure; called on them and talked happily all the while of the topsoil we were going to make, practically for nothing!

Orlyt GREENHOUSE
This Model—$395

Simple to put up anywhere any time. Sections go together with bolts and screws. $395 buys the 10 by 11 ft. Orlyt pictured ready to go on your foundation. Other Orlyts and lean-to greenhouses from $175. Carefree automatic heat and ventilation available. Ask for Free Booklet No. 27.

Subscribe to our UNDER GLASS—A helpful guide for greenhouse gardeners. Issued bi-monthly. 2 years—$1.00.

LORD & BURNHAM
IRVINGTON N. Y. • DES PLAINES ILL.

PLANTS NEED A COMPLETE FOOD TOO

NOW you can get ATLAS "Fish Emulsion" fertilizer, long used in California. All-organic, made from ocean "mineral-loaded" fish, has all 22 essentials for all plants. Super results, can't burn plants. Easy to use, dilute and feed as you water. Long-lasting, it clings to soil as only an emulsion can do. Economical, now de-odorized. PINT—makes 32 to 96 gals., $1.00 ppd.

YOU, too, will find ATLAS "Fish Emulsion" best for all plants

DEALERS—Write for proposition.

ATLAS FERTILIZER EMULSION—ROOM 800
1 Drumm Street San Francisco 11, Calif.

ATLAS ALL ORGANIC
FERTILIZER EMULSION

ENZ-BAC COMPOST STARTER

Snap your soil back to full fertility with ENZ-BAC. It is a carefully formulated mixture of bacteria, yeasts and other fungi, actinomyces, and enzymes; reinforced with all essential nutrient elements; and is rich in vitamins and hormones.

ENZ-BAC converts all kinds of wastes into organic fertilizer, stimulates the action of beneficial organisms in the soil, deodorizes garbage cans and toilets, decomposes garbage rapidly. With ENZ-BAC compost can be made without manure. When the raw materials are shredded, compost can be made with ENZ-BAC in less than a month. ENZ-BAC can be used itself as an organic fertilizer without injuring growing plants.

1 ton unit, $2. 5 ton unit, $8.

Organic Implements and Products Company,
P. O. Box 777, Haddon Heights, N. J.

Here is the newest thing in Iris –

Shown here is BALLERINA...one of the many new Hall Flamingo Pinks

Everybody is talking about these new breath-taking luscious pink Irises with the red beards...we are introducing **Vanity Fair**, **Fuchsia** and **Ballerina** this year, besides offering a **complete new line** of specially selected pink seedlings! Also, two new ones from Kleinsorge: **Fandango**, an improved Mexico and **Solid Gold**, a huge deep yellow.

1951 Edition

Send 25c today!

AMERICA'S FINEST IRIS CATALOG: Loaded with large colored pictures. Almost 100 natural color kodachrome illustrations, money saving collections, lists and fully describes over 300 modern varieties.

If you are planning to plant your first Iris, or if you are a seasoned Iris expert, you simply must see and own one of these beautiful books. Actually a collector's item—it cannot be distributed without charge; the 25c fee may be deducted from your first order. It really costs us almost double that amount.

Cooley's GARDENS

BOX 100 • SILVERTON, OREGON

When the time came for the demonstration we had a perfectly wonderful crowd, not counting those who confessed afterwards they had watched from attic windows all afternoon!

We gathered the most varied collection imaginable into the garden of one of the members, labeled it all, and then the President of the Club explained the nature and value of each ingredient and invited inspection.

With the president atop a bale of straw explaining each step as we went, we made one Indore pile, one mixed and shredded pile, (both in bins,) and one pile of composted straw. (The worm pit in the corner of the garden attracted a good deal of inquiry, and was explained also.)

Believe it or not, local people who had never heard of organic gardening before, and who came politely in their Sunday best, left the gathering early and returned in their garden clothes and with pitchforks!

Incidentally, we got steam from the shredded pile in 14 hours which exceeded our promise to the public, so the garden gate has been swinging steadily ever since...and the local paper really did the thing up brown for us, three columns wide!

We pass this idea on to other garden clubs for what it is worth, and before long we think it'll be worth plenty to the South Jersey Organic Gardening and Farming Club membership list!

Mrs. C. L. Sweeny
317 Mansion Ave., Audubon 6, N. J.

Earthworms and Roses

Here is a bit of evidence of how roses love earthworms. I am happy to pass it on to others who are interested.

In my rose bed I have had about two dozen tea roses. Three years ago I put worms in my bed. My roses have been healthy, sturdy, and they bloom all summer.

I was given four roses by a gardener who believes in spray and using poisons as well as commercial fertilizer. I planted those roses in my bed in early spring and the only roses which had aphis and other bugs on all summer were those four tea roses. I had to keep them washed off with a hose plus destroying with my hands. It took them two years before they were strong enough to resist the pests.

My roses this last summer were over four feet high and in the late fall, I cut them back about a foot from the ground. I fed

them some bone meal in the fall and put about six or eight inches of leaves around them and a light covering of soil.

I know from past experiences that this spring the worms will have eaten all the leaves and fertilized my bed well for the roses to feed on this summer.

Dan Meyers
Mount Union College, Alliance, Ohio

Non-Poisonous Spray

A man who composted his apple trees asked you if there was some way to protect the fruit from pests without using poison sprays. You answered that the matter was being studied and you hoped to find a way. For a few years the orchardists have been using an artificial spray instead of arsenate of lead, and non poisonous to man or domestic animals. It works all right on the West Coast where a spray combined with bordeaux is not needed.

Insect Traps

Sixty-two years ago a Civil War veteran showed me how he kept his plum trees free of black-knot. He hung in the trees one or two large mouth pickle bottles half full of a weak mixture of molasses and water. The moths and flies flew in and drowned; when the sweet water fermented it became more attractive. Every time the liquid was full of insects he dumped it out and put in a fresh mixture.

Forty years later I tried this scheme on my apple and pear trees, using pint and quart fruit jars half full of molasses and water. Very little molasses is needed; just enough to color the water or about ½ cup to one gallon of water. The only spray I used was black-leaf-forty (nicotine) to control the aphis.

About three years after I had started using the molasses and water I read of a test the U. S. Department of Agriculture had made in a large apple orchard in California. This orchard of thousands of trees was divided into sections, each section receiving a different combination of sprays and times spraved. One section near the center had no spraying, but containers were hung at the tops and on the lower limbs of each tree. Beer, wine, and sweetened water were used as bait; all proved equally attractive.

At harvest time a count was made of all imperfect fruit and the section where the bait was used had about 12% less bad apples.

MOW-MASTER not only does a beautiful job of mowing grass and cutting tall weeds, it also pulverizes autumn leaves. It keeps the lawn fresh and clean looking. Powerful 2 H.P. Engine—direct drive—easy operation—triple duty and long season use, ALL in one machine. No wonder MOW-MASTERS are popular.

PROPULSION ENGINE CORP.
7th St. & Sunshine Rd. (Dept. OG-6)
Kansas City 15, Ks.
Write for illustrated folder at once.

Gentlemen: Please send me your illustrated folder, describing the MOW-MASTER Line of Power Mowers and Grind-a-Leaf attachments.

NAME.....
ST. ADDRESS.....
CITY..... STATE.....

NEW IRIS BOOK
in full NATURAL COLOR

Fifty pages of wonderful Iris pictures... hundreds of IRIS in natural color from original kodachromes. Natural color garden scenes showing planting and color arrangements. Full color flower arrangements by famous specialist. The 100 best Iris by test. Unique Iris color planting plan by leading midwestern landscape specialist. Send 25c today.

Schreiner's GARDENS
Route 2, Box 327-K Salem, Oregon

GLAUCONITE
POTASH MINERAL
A Natural Product in a Natural State

GLAUCONITE POTASH MINERAL is a safe source of Potash plus many valuable trace elements. An age old mineral deposit, it rounds up and holds in storage WATER which it feeds to plants as needed. Write for information and prices. (F. O. B. Medford, N. J.) **INSOLUBLE IN DISTILLED WATER YET ABSORBABLE BY PLANTS.**
We also carry **AA quality** phosphate rock and **AA quality** agrinite. They can be used effectively together or separately.

National Soil Conservation, Inc.
Dept. OG-6, 90 West St., New York 6, N. Y.

I would say the test was unfair as the bait drew and caught many moths and flies from the sprayed sections.

I never saw a honey bee caught in the mixture or near the jars. A system of small pulley wheels with strong string tied to the jars can be used to raise them to the tops of the trees and not use a step-ladder. The containers work better not rinsed out when refilled. A large tree would need 3 quart jars in the top and 4 on the lower branches within arm's length from the ground.

H. Milton Cheever, c/o M. Lombard
14 Charlton St., Worcester 8, Mass.

Tomatoes Sown Outside

For several years we have been sowing tomato seeds directly in the garden, a few in a place, as soon as danger of frost is past. The resulting plants were much more vigorous and healthy than those purchased from the greenhouse and matured almost as early, since they had no set-back from transplanting outdoors. The seedlings are carefully moved to a new location when four or five inches high.

Mrs. D. W. Davis
R. 4., Vassar, Michigan

Mulching Saves the Day

During a recent hurricane I realized that mulching has proved itself in building strong citrus trees and papaya. I lost several unmulched trees, some of which were blown down and others torn completely away leaving only twisted stumps. That happened even to 25- or 30-year-old trees. All the mulched trees look untouched except for loss of fruit. The trees which had been mulched, even between the rows, came through the blow very well, retaining most of the new tender growth with the leaves unshredded.

Mrs. F. C. Parkinson,
3901 S. W. 6th St., Miami, Fla.

Baby Tears

This is a creeping house plant with an interesting leaf. Many gardeners complain of losing it after one season. In the spring if the plant is taken from the pot and planted in a partially shaded place, as in borders or Rock Gardens and kept well watered until established, it will spread out and put on new growth. Then by fall it will be in good shape for potting and bringing into the

FRAZER COMPOST

It's alive!

Contains up to 100 Billion *Living* Soil-Building Bacteria per Ounce!

NEW LOW PRICES!

PARCEL POST PREPAID

	2 lb. bag	10 lb. bag	25 lb. bag
Local Chicago	$.65	$1.30	$2.15
Up to 150 mi.	.70	1.40	2.50
150 to 300 mi.	.75	1.50	2.70
300 to 600 mi.	.80	1.70	3.10
600 to 1400 mi.	.85	1.95	3.65
Over 1400 mi.	.95	2.30	4.60

(Above prices include postage and handling.)

FREIGHT COLLECT

50-pound bag	$ 2.70
100 pounds, bagged	4.95
1 ton, bagged	60 00

(Two 50-lb. bags shipped for same freight cost as one.)

Frazer Compost *vitalizes* your soil while it enriches. Ideal for lawns, gardens, flowers, shrubs. Use as activator in your own compost pile! A true organic enricher, active, living, dynamic! Now available at mass production prices. Order direct from greatly enlarged new plant in Chicago's Union Stock Yards!

ORDER DIRECT . . . TODAY

FRAZER ILLINOIS COMPOST CORP.
999 Exchange Ave., Union Stock Yds., Chicago 9, Ill.

Please ship.....lbs., Frazer Compost by: PARCEL POST / FRATE COLLECT

NAME.....

ADDRESS.....

CITY.....STATE.....

Here's What M-E ROTARY TILLAGE WILL DO for YOU... for Your SOIL... for Your CROPS

YOU can till your soil earlier.... prepare perfect seed and root beds easier and quicker.... cultivate faster and cleaner throughout the growing season.

YOUR SOIL and humus will be rebuilt Nature's way by incorporating organic material into the soil in the ONLY way that gives you constant soil balance and maximum release of minerals and other "plant food" elements.

YOUR CROPS will be healthier, richer in vitamins.... better in size, flavor, and general quality .... and your entire yield will be considerably increased.

Benefit *These Ways This Year* with M-E!

2 NEW MODELS! Variable travel and rotor speeds adjusts tilth to any type of soil or crop. New fingertip depth control—improved hood and tine design. 12" and 16" models.

Write Today

to M-E, 311 Marion Street South Milwaukee, Wis., for FREE illustrated booklet.

REBUILDS SOIL NATURE'S WAY

MILWAUKEE ROTARY TILLERS

Milwaukee Equipment Mfg. Co., So. Milwaukee, Wis.

you can GROW MORE—
you can GROW BIGGER
and HEALTHIER:

VEGETABLES
FLOWERS
FRUIT
GRASS

if you treat your soil with this safe, non-acid, superfinely ground, natural phosphate. Benefits first crop and for years thereafter.

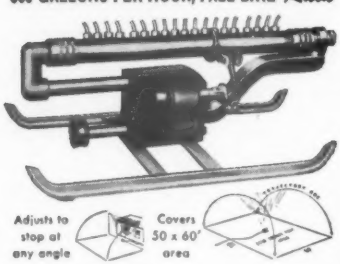
RUHM'S
Super Fine
PHOSPHATE ROCK

For Prices and Full Information write:

AUSTIN FEED & SEED CO., Chattanooga, Tenn.
FRED P. BIERER, Box 28, Ames, Iowa
BRYAN & SHEFFER, Portand, Indiana
ENGLEWOOD FARM-NURSERY, Muskegon, Mich.
RALPH W. RIKER CO., Lansing 15, Michigan
JOHN A. SALZER SEED CO., LaCrosse, Wis.
SOILSERVICE, Townsend, Massachusetts
VAUGHAN'S SEED STORE, Chicago 6, Illinois
FRED A. VEITH, Cheviot, Cincinnati, Ohio
CARL W. WESTLING, Hartville, Ohio

ACME
Shower Queen
"Rains Over All"

300 GALLONS PER HOUR, FALL LIKE *Rain*



Adjusts to stop at any angle

Covers 50 x 60' area

Nature's Only Competitor

SHOWER QUEEN'S beautiful waving plume of pure sparkling water falls as a gentle April shower. Perfect for all exacting watering requirements. Large rectangular pattern gets right up to the corners, eliminating excessive overlapping. Repositioned without shutting off water. Fully Automatic and Positively guaranteed.

Write for free data and prices

ACME SPRINKLERS 412 WALBRIDGE ST. KALAMAZOO 3, MICH.

house. The plants prefer a rather sandy potting mixture and do best in clay pots set in a saucer of sand, keeping the sand rather moist. Then by close attention they will grow in containers without drainage.

I have been doing this for several years. Have been selling potted Baby Tears to a local florist and now that I have a small greenhouse, I have a year 'round demand for Baby Tears. They send out small ornamental containers for me to start for them. The plants will grow in flats away from the heat pipes or under benches in the greenhouse.

Mrs. F. W. W., Champaign, Ill.

How to Transplant

I let the root of the seedling rest on the mud and, while I hold the plant upright with my left hand, I brush dry soil into the hole with my right hand and press it hard against the root. This causes the mud to ooze upwards and cover the root. When the hole is filled and the soil well firmed, I pour more water over the surface, put an inverted flowerpot over the seedling and offer up a little prayer. I have used this method on seedlings which are generally held to be hard to transplant, such as cauliflower, and have not lost a single one.

Leonard Wickenden

Drain Pipe as Composter

Stand a drain tile on end as a composter. It is rat and dog proof, and will hold the winter's accumulation of garbage without looking unsightly. I bring bucketfuls of composting materials home in the car and have lots of it to use this spring. The earthworm population in our garden has increased greatly with the use of compost. Last fall I raked a large compost pile over and planted carrots. In spite of our cold winter we had our own carrots all winter.

Mrs. Harry J. Lang,
11244 24th Ave., N.E., Seattle 55, Wash.

Compost Heaps in the 90's

As far back as the 1890's, compost heaps were used and were well-known. As a 5-year-old, I remember big compost heaps made by my father. He put barrels, with the ends knocked out in the center of the heap, one on top of the other.* Instead of soil he used turf from the fields. To prevent rooting of the grass in the heap, the sod was turned upside down. Stable manure was also layered into it. Then the heap stood for

several months, when it was turned and spread on the fields. Food grown from the compost was the food on which we were raised. None of the children ever had any serious illness, with the exception of one boy who survived a touch of spinal-meningitis. All of the children are living today with no other serious sickness since, more than 50 years later.

A Subscriber

• The barrels were probably intended for aeration, but would have done better if holes had been punched in the sides.

Rural Minister a Gardener

My *Organic Gardening* has opened up an entirely new world to me. Although I just got started in a small and amateur way last spring my garden last season was the envy of the neighborhood. Many people remarked about what a wonderful garden I had. I think I now have enough compost made that I can use it for everything this spring and summer. I am eager for all the information I can get, but being a rural minister my finances are limited to just about the "musts" of such things.

Rev. Floyd S. Hendershot,
Big Flats, New York

Strawberries and Parsley Respond to Compost

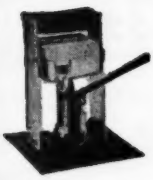
In one of the richest, most heavily composted beds of my garden I have a Rockhill strawberry bed. They are thriving very well. their leaves being of the darkest green color imaginable. This spring when I pulled the mulch of leaves off the bed, the earthworm castings completely covered the ground. Parsley, two feet high, borders the bed.

Russell Pratt,
1017 Queen Ave., Yakima, Wash.

Chemical Fertilizers and Earthworms

We have a large city lot with a very small vegetable garden in the back which only receives sun for about half the day. When I first became interested in organic gardening I had just tried to raise vegetables for three straight seasons. The soil is adobe; hard as a rock or sticky as glue, and in the three years we did not raise sufficient vegetables to cover the bottom of a wicker basket. Then came "Organics" which we have been following three years with no poison sprays or

20% more juice with the KK juicer



• If you want fruit juices that are more nutritious, more palatable and delicious to consume — and up to 20% more than you've ever extracted before, then use a K & K Juicer . . . the only juicer of its kind on the market.

Because it's hydraulic it delivers more than 3000 lbs. of pressure to give you greater quantities of pure, clear juice free of all pulp.

ACCEPTED for ADVERTISING in today's health PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION

Modern K & K Shredder outperforms them all

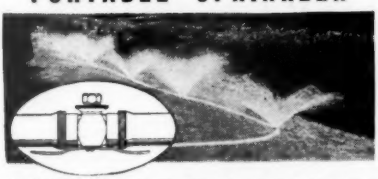
• As a wonderful kitchen companion, the K & K Shredder is marvelous for quick and efficient shredding of fruits and vegetables for soups, salads and desserts.

Both economically priced, they quickly return their value, giving you more palatable food that is delicious and nutritious to eat. Write today for full details.

Address inquiries to: Dept. OG6

KNUTH ENGINEERING CO
2617 N. ST. LOUIS AVE., CHICAGO 47, ILL

PORTABLE SPRINKLER



AMAZING NEW SPRINKLIT
5 sprayers on 1 hose

Completely waters flower beds, shrubs, trees, narrow strips, irregular shaped areas. Covers 1 to 1000 sq. ft. Sprayers turn on and off individually; flow adjusted at faucet from full volume of fine spray down to soaking volume. *Utility hose* with sprayers turned off. 50 ft. Goodrich plastic hose; 5 solid brass sprayers. MONEY BACK GUARANTEE!

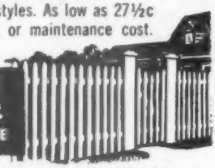
Order Now—in time for hot weather.
Goodrich Koroseal Plastic—$17.95
Ribbed Plastic—$14.95
(Plus Postage: 50c E. of Miss.; $1. W. of Miss.)
C.O.D. ORDERS ACCEPTED
HOWARD SALES COMPANY
1650 Belmont Ave., Dept. OG-6, New Hyde Park, N.Y.
Write for Illustrated Folder

FENCING FOR EVERY PURPOSE

install it yourself . . . and save

Beauticraft
POST AND RAIL FENCE

Increasingly popular for homes, estates, and farms. Both economical and durable. Available in Chestnut, Locust and Cedar in 2, 3 and 4-rail styles. As low as 27½c a ft.—no painting or maintenance cost.



Colonial
PICKET FENCE

Merge your landscape and architecture into a single harmonious pattern. Prefabricated Red Cedar Picket Fence, 7 ft. sections ready to slide into place. Available in 24", 36" and 48" heights. As low as 59c a ft.

ALSO: Colonial estate, Rustic Picket, Parkway Rail, Hurdle, White Woven Picket, Board Fences and Gates.

FREE Illustrated Catalog

ARNOLD-DAIN CORP.
BOX 11 MAHAPOC, N. Y.

PURE BONE MEAL TABLETS

for the prevention of
CALCIUM and PHOSPHORUS DEFICIENCIES

Recommended dose: 2 tablets per day.

200 tablets (7½ grains each) $1.95
500 tablets (7½ grains each) 4.50

BARTH'S

Dept. 718 Woodmere, L. I., N. Y.

sprays of any kind, and two years of complete organics. We are not as yet entirely free of pests but the change has been so great that it amazes me.

After the first year we changed from making compost to mulching; all vegetable residue I chop up and use as mulch. Last year we had a very good crop of vegetables with a promise of much better this year.

Many of the pests have become our friends. Pill bugs, snails and slugs as well as earthworms eat the mulch. Wireworms, which we had before mulching, have gone entirely. Please understand that the entire surface of our garden is under mulch constantly. We have domesticated earthworms as well as native and, to turn back to this chemical fertilizer would mean their destruction. I tried the experiments of which you were telling concerning earthworms in boxes, with and without chemical fertilizers. All boxes contained organic material. Starting with very small amounts in the test boxes and running up to approximately 1500 pounds per acre of 4-12-4 chemical fertilizers and making counts of earthworms and capsules at each addition, we found that the capsule count started to decrease at about 150 pounds per acre. At 500 pounds per acre the earthworms were still there but not looking well and, by the time we had reached 1500 pounds per acre, we had no earthworms.

I might mention that the only compost we are making now is made of such residue as cannot be used in mulch—extra bulbs, canna roots, and such things that cannot be spread out on the top of the beds. This small amount of compost is used in the soil as made.

MECO *Shredder*

ONLY **$85;** Fitted With 1/3 h.p. Motor $98

Especially designed for leaves, but can be used for all kinds of non-woody plant materials. A small machine with large capacity. Converts leaves into instant leafmold which composts rapidly or can be used on the soil directly as an organic fertilizer.

MECO *Mulch Cutter*

Hand operated ONLY **$38;** Fitted With 1/3 h.p. Motor $54

Now every gardener can afford to own a shredder and practice the no-digging, no-cultivating, no-hoeing type of organic gardening. MULCHED VEGETABLES ARE RICH IN VITAMINS. Especially designed for cutting into small pieces all kinds of stems, including woody stems up to a half inch in diameter. It will cut leaves by putting them through repeatedly but not as finely as the MECO shredder.

MECO COMPOST STARTER—1-ton unit for $2. prepaid.

TERMS — Cash with order, shipped f.o.b., Lewisburg, Pennsylvania.

MAC ENGINEERING CO.
LEWISBURG PENNSYLVANIA

One other item occurs to me. From our experiments we have found that in living soil, living in the sense of earthworms, bacteria, fungi, etc., non-composted leaves or shavings can be dug into the soil and plants of any nature can be planted right in the midst of it with beneficial effects. We have been doing this for a year now.

Zane J. Sutherland
South Pasadena, Cal.

Natural Pesticides and Food

Last year I became interested in the many "pest fighters" we had. Birds, of course, in flocks, and the toads helped. But one day, seeing a wasp dive upon a cabbage worm and consume him, leaving a little streak along the leaf. I investigated and found many such streaks and many wasps at work. There were many lady bugs destroying eggs of many bugs and worms, as well as eating plant lice. We found some aphis on the broccoli, but the next time there was but one clump gathered on one yellow leaf. A healthy plant protects itself. Other years aphis destroyed our broccoli.

A Subscriber

Rabbits Baffled

Having trouble with rabbits eating your prize vegetables? We did too until we salvaged some left-over lumber from an old crate and invested in some chicken wire to make these portable protectors for low-growing vegetables. These are easy to make and will have your rabbits baffled as they cannot enter this protector and vegetables will grow unharmed. For easy handling, make the protector about 6 ft. long and about 10 in. wide. Hump the wire over the frame to give the plants plenty of room to grow. Fit the protectors in a series over the seed row, just before the seeds germinate and the plants will be protected from germination to maturity.

Kenneth McLellan
73 Harvey Ave., Doylestown, Pa.

The Postman Reads Organic Gardening First

Once last year I came out on the front porch and found a mail carrier sitting there reading my copy of *Organic Gardening*. My appearance didn't seem to bother him. He merely explained that he was finishing reading an article which interested him, that he always looked for the magazine, and that I was the only subscriber on his route.

Mrs. John Paulli
1057 W. 14th St., San Pedro, Calif.

Yes! YOU CAN HAVE HEALTHY VIGOROUS PLANTS THE EASY WAY with Ko-K-O
HERSHEY'S Ko-K-O
WHAT IS Ko-K-O?
Cocoa bean shells and other parts of the cocoa bean are blended expertly and sweetened to produce a natural, organic material that will furnish a steady source of humus for the soil.

FOR LAWNS AND GARDENS

- **Apply Direct to the Soil**
- **Mix in the Compost Heap**
- **FEED TO EARTHWORMS**

An essential material for the Organic Gardener . . . A slow-acting, long-lasting energizer that increases and replenishes the organic content of the soil . . . Improves soil texture . . . absorbs and retains plant-nourishing moisture . . . helps decomposition of soil break-up into humus . . . binds sandy soils . . . loosens clay soils.

Packed in Handy 50 Lb. Bags. If your dealer cannot supply you we will ship direct to you. Freight prepaid East of Mississippi River. (Write for freight rates west of Mississippi River.)

NEW LOW PRICE

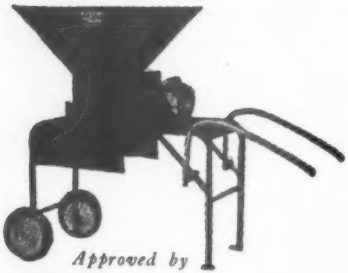
Send $1.90 for each 50 lb. bag; enough for 200 sq. ft. of NEW lawn or garden. Minimum Shipment 100 lbs. (2 bags).

HERSHEY ESTATES
HERSHEY, PENNSYLVANIA

SCARE-AWAY
the Modern Scare-crow
Shiny aluminum strips crackle and flash. Keep birds or animals away day and night. Lasting protection for gardens and farms, especially Berries and Cherries.
PACKAGE OF TEN 25¢
FOUR PACKAGES 1.00 POSTPAID

BURNETT-SEEDSMEN
Dept. S 23-25 Warren St. New York

The Keston Organic Shredder



Approved by Professional Engineers

Only $125, f.o.b. Factory in Pa.

ACCESSORIES

½ h.p. electric motor	$34.00
1½ h.p. gasoline engine	44.00
Clutch for easy starting of engine	10.00
Portable features, as illustrated	17.50

Order a Keston All Purpose Shredder Now!

Grist Mills for the Home *

A hand-operated grist mill, with adjustable burrs, for making your own whole-grain flour or cereal. Capacity, Coarse: 1 lb. per minute. Fine: ¼ lb. per minute. Grinds all grains, coffee, spices $8

Write for prices for larger and power models.

Make Compost Quickly With

* Enz-Bac	1-ton unit $2. 5-ton unit $8.
* Fertosan	1-ton unit $1. 4-ton unit $2.50 20-ton unit $10.50
* Keston Herbal	5-ton unit $1.00

Terms: Cash with order. * Prepaid—add 10% West of Mississippi
** F.O.B. Factory

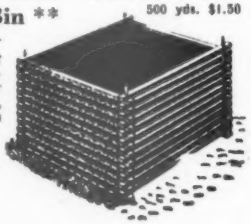
*** Keston Earthworms** $6.50 per thousand

*** The Keston Fulcrum**
For no-digging enthusiasts. Fits any garden fork, $3.50.

*** Fertosan Land Cleanser**
Startling ORGANIC treatment for COCCIDIOSIS in poultry, goats, rabbits. — 1 acre size $10.50.

**Compost Bin ** ** 500 yds. $1.50

LEHIGH TYPE—
Rot - resistant New Jersey Cedar. Steel corner rods. 1-ton size, $10.00; 2 - ton size $15.00.



All prices subject to revision.

Organic Implements & Products Co.
P. O. Box 113, 24 Seventh Ave., Haddon Heights, N. J.

What's New At Home and in the Garden

Meco Mulch Cutter

During the past several years the mulch method of gardening has gained greatly in popularity. This method represents gardening at its organic best, as it

represents a close imitation of nature's gardening. But the available shredders have been too costly for the small gardener. Now the MECO MULCH CUTTER fills the long-felt need of a really inexpensive, but highly efficient plant materials cutter. It cuts into small bits all kinds of plant materials, including woody stems up to a half inch in thickness.

With the MECO MULCH CUTTER all kinds of plant wastes, corn stalks, tomato vines, bean stalks honeysuckle vines, weeds, hay, straw, hedge trimmings can be cut into such small pieces that they can be used on the soil as a mulch. Raw organic matter cut into small pieces can be converted into compost in a surprisingly short time.

Tests made at the Penna. State. Agr. Experiment Station indicate that mulched vegetables yield higher than clean cultivated crops. A mulched garden requires

very little care after it is planted and mulched. Mulched vegetables are high in vitamins and rich in minerals. The MECO MULCH CUTTER is manufactured by the MAC ENGINEERING COMPANY, Lewisburg, Penna.

Greenhouse Booklet

A free booklet entitled *Orlyt Greenhouse* is being offered by Lord & Burnham of Irvington, N. Y. Complete with numerous illustrations, this booklet points

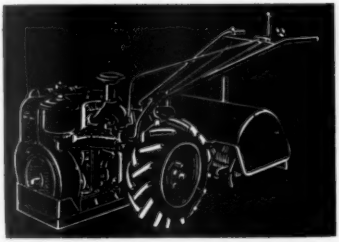
out the opportunities and advantages of greenhouse gardening and gives detailed instructions on erection and the proper use of the greenhouse. This booklet is offered to *ORGANIC GARDENING* readers without charge.

Agromat

A fluid mulch can be made from any organic matter generally put in the compost heap. This is done by the Agromat, recent development of the Wandel Machine Co., Downingtown 1, Pennsylvania.

This machine homogenizes and breaks down the cell structure of organic ingredients in from 15 to 30 minutes. The resultant mulch (designated F-A-Mulch) spreads itself uniformly over the ground. The minerals, trace elements and organic

ARIENS ROTARY TILLER
America's First! Still America's Best!



PREPARES SEEDBED, TILLS and CULTIVATES
in 1 operation

Makes gardening EASY! Powered for perfect work in any soil—choice of 7, 9, or 12½ h.p. air-cooled Wisconsin engine. Two clutches. Two speeds forward; reverse. Heavy-duty tines. Full tillage; 2 to 10 inches deep. America's FIRST rotary tiller—still America's BEST! See your dealer or write:

Ariens COMPANY
BRILLION WISCONSIN

DAYLILIES
Send FOR AMERICA'S LARGEST ALL-COLOR CATALOGUE! IT'S YOURS—IT'S Free!
AMERICA'S LARGEST GROWER (30 ACRES)
RUSSELL GARDENS
SPRING 10, TEXAS

FER-TR-EL
The Organic Fertilizer *Has everything in one package*
Agricultural Slag Forms its Base
BASIC BLEND $2.25 FOB Plant
Write for descriptive pamphlet and full price list
J. & G. SALES COMPANY, Fullerton, Md.
DISTRIBUTORS WANTED

ROTO-CUTTER
Cuts 20" swath perfectly—reduces cuttings to a fine mulch.
Do all your grass cutting and trimming in one operation. Covers more surface with less effort; streamlined housing lifts edges of shrubs to trim beneath.

ROTO-CUTTER mows every blade in tall grass, weeds, plantain, etc.—cuts forward, backward or sidewise in arc. Easy to work close up to trees, shrubs. Versatile; cutter easily replaced with Roto-Hoe; motor used as portable power unit. Roto-Cutter complete with 2 h.p. Lausen motor, $122. (Add Roto-Hoe unit any time—only $52. more.) Ask your dealer for demonstration; or write for facts. (Dealer inquiries invited.)

ROTO-HOE & SPRAYER CO.

Box 2 Novelty, Ohio

MAKES ALL PLANTS Thrive!

BIO-GRO

ORGANIC LIQUID FISH PLANT FOOD

• PROMOTES AMAZING GROWTH IN FLOWERS, LAWNS BUSHES, VEGETABLES, HOUSE PLANTS

Make this year's garden your *finest* with BIO-GRO! You'll have sensational results, even in poorest soil. BIO-GRO is nutritionally complete; SAFE for all plants. Easy to use—just add water. Economical pint can makes 40 gals. nourishing, odorless plant food — only $1... Qts. $1.65; ½ pts. 60c; all postpaid. Write for FREE BOOKLET.

ORDER NOW!

BIOPRODUCTS Corp. Ltd.

WARRENTON, OREGON

nutrients are put into solution and are absorbed by the soil. Ultimately the layer of fibrous matter is converted into humus. This application is generally made in the fall for a well-conditioned soil by planting time.

F-A-Mulch can also be used at planting time and should be made of old newspapers to which are added the necessary fertilizers as well as required amounts of lime, phosphate and potash. The minerals go into solution with the F-A-M and penetrate into the soil. The mulch grips the ground tenaciously and gives a weedless, workless garden. Several size models are available.

Pottery Pansy Ring

For dainty spring flowers or for ivy the year 'round—imported Italian pottery pansy ring. Hand-painted, permanently

fired gay floral designs. Eight individual vases for a 12 inch ring. $3.95 plus 25 cents postage from Memory Mart, 329-G, West Main St.,Waukesha, Wisconsin.

Soil Acidifier

The Fraim Manufacturing Company, Granby St. at 39th, Norfolk 4, Va., recently announced its organic soil acidifier—an extract derived from trees.

The manufacturer's three main claims are: First, unlike aluminum sulphate and other chemicals used for soil acidifying, this product supplies organic matter and adjusts the pH; second, it lightens heavy soils, binds light soils, and increases the water holding capacity; third, the high organic matter content increases both the biological and chemical reactions that take place in the soil making nutrients available for plant use.

Purified

BONE MEAL

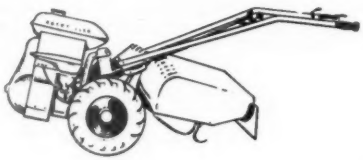
(For Human Consumption)

AN AMAZING NUTRITIONAL SUBSTANCE!

Supplement your diet with Natural Organic CALCIUM, PHOSPHORUS and numerous essential associated trace mineral content as occur in selected beef bone. We offer quality Bone Meal in various forms at lowest price possible: 1-lb. Bulk Powder $1.50; 3-lbs. $4.00; 300 7½-grain Capsules $3.00; 1000 Capsules $8.00; — 300 1-gram Wafer-tablets $2.50; 1000 Wafer-tablets $6.00 — 300 7½-grain Tablets with Vitamins A, C and D $2.75; 1000 Tablets $7.00. All scheduled prices Postage Prepaid. Send orders to:

NU-AGE PRODUCTS

1926 W. Railroad St. Loupurex, Penna., Dept. O.G.



ROTOTILLER OWNERS

Valuable Information **FREE**

Write the Factory Today

Parts Catalog, Operating Manual, Technical Information, available to all owners. If you have not registered with the factory to receive these valuable aids—DO SO TODAY. If you are unable to secure parts locally, send your orders direct to the factory.

FRAZER FARM EQUIPMENT CORP.
Dept. O, Auburn, Ind.

CUT OUT AND MAIL TODAY

Frazer Farm Equipment Corp., Auburn, Ind.
(DEPT. O)

PLEASE SEND ME:

- ☐ Parts Catalog
- ☐ Operating Manual
- ☐ Technical Information

MY ROTOTILLER IS MODEL— .....

Name.....

Address.....

Play Safe

Select your gardening needs from the advertising pages of Organic Gardening

TEETH AND THE ORGANIC METHOD

By J. I. RODALE

ONE of the first dividends our family received from the practicing of the organic method and the eating of foods raised organically was a noticeable improvement in our teeth. There were less and less cavities every time we went to the dentist. In the case of our youngest child, Nina, who is now thirteen, the condition of her teeth is perfect. She does not have a single cavity in any of her teeth. This was made possible in her case because she was only about three years old when we began to eat food raised organically. In my own case I have not had a cavity in five years. Hundreds of our readers have also noted a wonderful improvement in their teeth. Typical is the case of a family of three that came to see me recently, who told that where they used to have a yearly dental bill of about a hundred dollars, it is now reduced to about ten dollars, and consists only of routine cleaning. Only a few days ago a woman from Rhode Island told me that she stopped having cavities five years ago, after she began eating organically grown food. And, the peculiar thing is, far from their entire diet is organically produced. Usually the organic portion consists only of the vegetables that they raise in their own garden. Some purchase organically produced food through the mails. It is amazing what a small amount of organically produced food will do for the health of a person.

Permit me to quote an item from the *Field Magazine,* published in England, dated Jan. 6, 1945:

"I was interested in your letter from *Dental Surgeon,* because my seven-year-old son and I have only just paid a routine visit to the dentist. He seemed quite unusually impressed by the excellence of my son's teeth and asked me if he had had any special diet. I told him: No. That he had eaten no meat (including eggs) up to the age of three years, but since then had eaten meat and exactly what he liked. I added, however, that we grew as much of our food as possible on composted soil and that for more than his lifetime we have never used an ounce of artificial fertilizers.

" 'You have given me the answer,' said the dentist. 'Now I understand why he has teeth like that.'

"In my own case, my teeth used to collect huge quantities of tartar. Every year it had to be scraped off. We began using compost instead of artificials toward the end of 1936. When I went to my dentist in 1942, after a lapse (I am ashamed to say) of two-and-a-half years, I expected a terrific scraping to occur. There was no tartar to remove. Another two years elapsed before I went again, this last time. There was a very little tartar behind two teeth, and that was all.

"We have used compost for just about eight years, and for the last five of those years my teeth have lost their unpleasant habit of collecting tartar. Is this a coincidence? It might be. But I was telling this story to someone else, and she has had exactly the same experience. Incidentally, I asked the dentist if war-time diet could have anything to do with it. He did not think it had, because he finds now just as much tartar collecting on his other patients' teeth as before the war."

(L. F. Easterbrook)

Here is another quotation for the *New York Times* of May 29, 1947:

"Traces Bad Teeth to Soil"

"SCHENECTADY, N. Y.—Tooth decay as well as serious illnesses might be traced to our eating vegetables and other foods that were grown on soil deficient in calcium and other minerals, Dr. George D. Scarseth of Lafayette, Ind., director of research of the American Farm Research Association, declared in a General Electric Farm Forum address here.

"'It is not difficult to see how a deficiency of essential vitamins and minerals may cause weakened teeth with subsequent decay and abscesses,' Dr. Scarseth pointed out. 'Neither is it difficult to suspect that prolonged abscesses, pouring toxins into the blood stream, might well show up eventually in kidney disturbances, high blood pressure, or heart diseases.'

"Dr. Scarseth said that data collected by physicians, biochemists, agronomists and engineers working on the problem of soil deficiencies 'indicate there must be a close relationship between the fertility of the land and well-being of the animals that consume the crops.'"

In the March, 1946 issue of the *Dental Magazine and Oral Topics*, published in England, appears an article that shows the remarkable effect of organically produced food on the teeth of young boys and girls. I am going to quote the entire article. It was written by and represents the experience of E. Brodie Carpenter, a dentist:

"The effects of increased quantities of healthy food on the teeth of the children of the Royal Commercial Travellers' School.

"This school was founded one hundred years ago for the orphans of commercial travellers. The numbers vary from term to term, but in recent years there have been about 95 girls and 135 boys in two separate establishments in the same buildings. There is a good deal of land attached to the school, and from it in the years before the war the school was getting a certain amount of its vegetables. When war was obviously inevitable, the head gardener ploughed up a further five and a half acres which used to be a paddock for the horses, and brought this under cultivation for vegetables also. Every year since then he has grown more and more vegetables until now the school buys none at all.

"The system of agriculture would meet the approval of the most fastidious of the 'natural manure school.' Every ounce of waste is returned to the soil, and up to a hundred pigs are kept for their manure, which is composted with clippings from the playing fields and with straw. No artificial manure is used at all. The vegetables grown are like the pictures on the seed packets.

"It is a curious fact that part of the five-and-a-half-acre field is silt from the River Pin: this is in accordance with agriculture on the banks of the Nile. It is even more extraordinary that a smaller field was used by the L. M. S. for spreading the night earth from Hatch End Station in the days of earth closets: this is the method of the Chinaman, who has cultivated his own bit of land with his own and his animal's wastes for 4,000 years.

"The produce of the school's land has gone up by 33 1/3 per cent since the war for *nearly a hundred fewer children*, the number now being 240-250, whereas before the war they numbered as many as 340.

"Now what is the effect on the teeth? I took up the appointment of dental officer at the school in 1939, and at the first examination was very perturbed at the state of affairs. I graded the boys and girls into 'A' for none to two cavities, 'B' for three to five, and 'C' for six and upwards. 'A's' were 50 per cent., 'B's' 32 per cent, and 'C's' 18 per cent., and I found a number of cavities in 'fronts.'

"I settled down to an oral hygiene campaign and started with the 'fronts,' but the trouble was that all the children leaving had to be completed by the end of the Christmas term. I toiled on through that school year and the next, examining them every nine months.

"In September, 1941, things were no better: 'A's' were 56 per cent, 'B's' 27 per cent, and 'C's' 17 per cent. In 1943 and early 1944 there was a very obvious general improvement—cavities were fewer and the unhealthy, gluey sort of saliva so often seen in the adolescent age was decreasing. By 1945 the examination showed that 'A's' were 97 per cent and 'B's' 3 per cent.

"This was dramatic enough, but in September, 1945, there was an average of a quarter filling per child and the boys were 100 per cent 'A.' Out of 230 girls examined in a period of nine months, the child (a girl) with the most cavities had four. (Grading of the girls: 'A's' 97 per cent; 'B's' 3 per cent.)

"This simply astonishing change, I feel quite certain, is to the credit of the Board of Management and of the gardener—not mine. How else could one account for the *absence of incidence*?

"I am well aware that there are other items of diet, but I am convinced that, provided that there are no excesses in the rest of the diet, fresh vegetables provided by a sound system of agriculture are the corner-stone of dental health.

"The bread at the school before the war was not white but a special bread 'Nevill's' loaf. I consider 100 per cent wholemeal to be the ideal. The children have always had enough milk, and sweets (if these make any difference, which is doubtful) have always been regulated. The animal protein is restricted, as are fats. Eggs are new-laid on the premises. The diet, in short, is an ordinary all-round one, except that the 'vegetable protein is properly synthetised' and in abundance."

Now let us compare this with what workers at the School of Dentistry of the University of Minnesota are discovering about the teeth of the students of that institution. There were three successive studies that began twenty years ago which were written up in the April, 1951, issue of *The Journal of the American Dental Association*. I quote a portion:

"The 3,388 freshman students, both men and women, who entered the University of Minnesota in 1929 averaged 9.95 teeth affected by dental caries. The 4,348 students who entered ten years later, in 1939 had 11.8 teeth so affected. The 4,412 who came to the University in 1949 averaged 13.7 teeth affected by caries. All differences are statistically significant.

"Though started only 20 years ago, these decennial reviews of the dental condition of university freshmen really cover a period of approximately 40 years. The young people who entered the University in 1929 at an average age of about 19 years were born in 1910 or thereabouts. The period since that time has produced more benefits for dental health than any other period in the world's history. Nutrition, particularly among the American people, has greatly improved. Dental hygiene has become an almost universal practice, at least by the majority of persons in the higher socio-economic levels to which university students belong. Dental health education has been carried on at a constantly accelerating rate since 1910, and its emphasis has been increasingly on the desirability of early and frequent dental care to prevent the deterioration and loss of teeth.

"Nor has all this good advice been disregarded by the public. The teeth of most of these university students had been given good care. These young people keep their teeth clean and they go to their dentists to obtain fillings and other repairs or replacements when these are needed. The point is that they are needed. Despite all the care and attention that has been and is being given to the teeth of university students, these teeth are now decaying to a greater degree than they were 10 years ago and a still greater degree than they were 20 years ago.

"In the 1929 group of university freshmen there were 3,388 individuals, of whom 61, or about 1.8 per cent, had teeth entirely unaffected by caries. In the 1939 group, consisting of 4,348 students, there were only 51 who showed no evidence of caries, about 1.15 per cent. In the 1949 group, consisting of 4,412 students, only 30 had perfect teeth, a percentage of 0.68."

It is stated in the above article that the nutrition of the public has improved since 1910. *That* positively is not so. The ever increasing amount of chemical fertilizers used in growing our food crops and the greater amounts and increasing potencies of the poison sprays is causing an alarming degeneratism in the nutritional quality of our food. This does not take into consideration the increasing amount of tampering with foods in the factories where it is processed. Our foods are becoming more and more devitalized and our teeth and general health will retrograde more and more as this tendency continues. Where will this all lead to? If the present method of food production continues for another fifty years, I see chaos in our mouths and in our bodies. Also, more cancer and polio will result, until there will be complete revolt by our bodies. The figures at the University of Minnesota are only one sign. There are many others.

That the health of the teeth depends on the fertility of the soil in which our foods are grown has been demonstrated in an experiment conducted at Tufts College Dental School of Boston, and the Massachusetts Institute of Technology. It was written in the March 8, 1951, issue of the *New England Journal of Medicine*. The intention in this experiment was to compare the soil fertility of New England with that of Texas. Two groups of hamsters were used. One was fed on milk and corn that originated on a New England soil, the other from a North Texas soil. Both groups also received alfalfa that was purchased without regard to the place it was grown. It was found that the Texas-fed hamsters suffered 50 per cent less cavities in the teeth. The article winds up with the statement that "a mechanism operated in the New England foods that aided materially in production of dental decay. Investigations to determine whether this factor is organic or inorganic are contemplated."

This experiment demonstrates that the answer to health will be found in the soil to a great extent. There are other factors, but the condition of the soil in which our food is raised may well be the most prominent one. New England has been farmed the

(*Continued on page* 57)

CARE OF ROSES

Have a plentiful rose garden.

By FANNY WICKES PARSONS

YOU can plant a rose in the autumn or the spring with good results. It is largely a question, in this latitude, of your convenience.

Autumn means November or the early part of December. Spring means April or the first part of May. Anyway, that is when the growers will choose to send you the roses, and that's that. In either case, these are dormant roses, which means that the stems are leafless. It is also possible to buy potted roses in May, or even later. These will be in leaf, perhaps flower, and cannot be shipped, but you can pick them up at a nursery or florist.

One thing is very important: order dormant roses ahead. Six months ahead, I mean. You're much more apt to get the varieties you want, and above all, you're more likely to get good stock.

Planting

A rose, like anything else, needs a large and deep enough hole, soil firmed about the roots, and watering afterwards. If you can figure out to what depth the rose was previously planted in the nursery, that depth is ideal. This is not easy. My suggestion is to err in planting deeply rather than shallowly.

Cover the rose for the winter with soil, in November or December, after frost, and to about a foot up the stem. Don't scrape the soil up off the ground, but bring in new soil to do this. You'll have a row of little hills when you're finished. Between these hills put cow manure or leaf-mold or just leaves, or straw, anything to keep them in place. On top of everything put branches or straw, lightly, to keep things from blowing or washing away.

In April, uncover gradually, removing the coarse mulch materials first. If you have used manure or leaf-mold between the hills, dig it in later, as you cultivate. If you have used straw or leaves, they would have to be taken off. The soil from the hills could be spread on the bed, or all or partially removed, depending on whether you need the soil there or not. In an old planting, especially on the slightest slope, the bed is apt to wash away, and my beds being of this variety, I usually simply scatter the hills and level them on the bed at the first digging.

Pruning

Prune in April. Have a pair of sharp, strong clippers, and wear gloves! Cut out all dead canes. Eliminate crossing canes. By April you can see the new growth starting. Leave two to four of these eyes on each cane —more in cases of very vigorous bushes, if you like. Don't feel that the first pruning is the last. You can leave doubtful canes for a later cutting. I think it's impossible to prune perfectly at the first Spring effort. And, after all, the clippers are always handy!

Feeding

By May 10th or so the buds will be pretty well along, and it's a good idea to give a first feeding. Use a natural Plant Food, (one trowelful to a plant). Make a little, shallow trench about a foot away from the stems of *each* plant, scatter in a trowelful, and cover the trench again. Unless there's a severe drought, you needn't water.

Disbudding

Now, on most roses, you will find a group of buds on the end of each stem. I cannot recommend too highly your removing all but one. Pinch off the side buds with a slight twist as soon as you can do so without danger to the central bud. You will have far larger roses, they will have room to open, the plant will not be exhausted by an excess of bloom, and you will get a second growth more quickly, for you will cut the one faded flower off sooner.

Do not disbud polyanthus and landscape roses.

McFarland Co.

Roses protected for the winter with earth.

Natural Control of Diseases and Insects

All yellow or spotted or diseased leaves should be removed to the compost heap, whether on the plant or on the ground.

Aphids, those soft green or reddish sucking insects, I find are best removed by hand. They don't fly, at least actively, and can simply be wiped off by a bare hand, a gloved hand, or a piece of tissue in the hand! They only attack new growth as a rule, and it is well to look between the leaves, under the leaves, and up and down the stem to make sure of removal. However, the aphids return, depending on the weather, in a day or so to a week. Still, I find this hand process less arduous than spraying.

If your roses are malformed, if the color is faded in the bud or opening flower, if the outer petals are shrivelled and the edges of the inner petals are brown, then you have thrip. The damage of thrip varies, depending on how soon the creatures enter the rose. They are sucking and stinging, not chewing insects. They are barely visible, very active, straw colored (the slightly larger adults are black), about 1/32 of an inch long. They enter the bud as it begins to show color. It is often possible to remove the outer petals, when the rose is first opening, and, as you remove them, to crush the thrip you find there with your hand. The rose will then open normally, and you will get a fine bloom. However, it won't last well when cut, and it may need a second or third cleaning off. White or light-colored and many-petalled roses are the most susceptible. Any hopelessly infested flower and any fading flower should be cut off at once, the thrip eliminated by hand, and the bloom discarded far away from the rose beds.

Japanese beetles are a problem. A can of kerosene and a daily or twice daily dropping of beetles into it, preferably early in the morning and evening when the beetles don't fly, will preserve your plants. Fortunately, the beetles are gone by mid-September, and,

if the plants are healthy, you will get a good fall bloom.

You may find holes in the center of some of the older canes, especially when pruning in the spring or later in the fall. These are made by carpenter ants. Cut below the holes to clean wood, and destroy the ants you have found. Sometimes these holes go down very deeply, right into the root. Cut off as far as you can, and plug up the hole with a small pebble. In fact, later in the season, say August, when the plants become more woody, it is well to paint any cut surface with tree paint, or colorless nail polish will do.

Late in June, usually, you may find that the new growth, encouraged by your cutting, turns brown and becomes dry at the very tip. This is due to leaf hoppers, sizable brown insects that bite this new foliage. It is extremely hard to catch them, as they are wary and hop incredible distances. The plant itself is not affected, and again new growth may appear below the brown tip. I have not found any way to combat these insects.

Black spot* is the most mentioned and most familiar rose disease. A fungus attacks the leaves, forming blackish spots. The disease originates in the soil, and rain and dampness are favorable to it. The leaves so affected drop off. Pick them up, and pick all leaves so affected from the plants.

How to Cut Flowers

When cutting off faded blooms, do *not* cut immediately beneath the flower, but take this opportunity to prune your plant further. If your bush is, say, 3 feet high, cut off about a foot, to an outward-pointing, 5-divided leaf. Cut about half an inch above the leaf, a clean, slanting cut. Occasionally, on a thick bush, a weak growth should come off at the ground. Occasionally a very outward-leaning growth should be pruned to an inward-pointing leaf. Never hesitate to prune a rose at any time before mid-September. Take out any weak, or old, or interfering growth, whenever you like, before that time.

This sounds like a formidable program. It is! It would be impossible to follow it perfectly; I certainly don't; there is not enough time for one thing. However, a little care goes a long way with roses—more care goes further!—and a perfect rose is a fine reward.

* *Ed. Note: Black spot and mildew, which are splashed to plants from the soil, can be largely prevented by maintaining a suitable mulch over the soil. A mulch of crushed corncobs is highly recommended.*

HUNZA—the Land and the People

THIS lush field of maize was photographed in a genuine "Shangri-La," the land of the Hunzas. Here the people live on a diet of high quality but low volume, notes J. I. Rodale in *The Healthy Hunzas*. For a copy of this fascinating 263-page book with 20-full-page illustrations, send $3.00 to *Organic Gardening*, Box OG-6, Emmaus, Pa.

THE PROOF OF THE PUDDING

Organically grown plants for Big-Name catalogues.

By JEANNE P. RINDGE

GERALD WALLACE is an independent man—and a stubborn one. Because of this, he refuses to be stampeded into certain horticultural notions practiced by the majority of his nurserymen colleagues. Instead, he experiments alone, year after year, following the dictates of his own observations.

His discoveries have paid off. His beautiful show garden on U. S. Route 5, just West of Batavia, N. Y., brings visitors from the country over. And his painstakingly propagated plants—notably his hardy viola, the Pyrethrum Rosary, Pyrethrum Rose Mist, and his Dianthus Wallace Red—are featured in several of the "big name" catalogues. Every year, Mr. Wallace sells thousands of plants to scouts of the nationally known nurseries.

His plants are notable not only for their beauty, but also for their disease resistance. This trait he attributes to the "unconventional" practices which trial and error have taught him.

"I have discovered," he says, "that plants simply do not know how to use chemical fertilizers. Although plants will grow taller, the blossoms are no larger, the wind blows them over more easily, and—most important of all—they cannot resist disease." His own healthy garden which knows no poison spray or chemical fertilizers, is ample evidence that none are necessary—in fact, that plants are far healthier without them.

"Practically none of the big growers agree with me," the saltyhaired nurseryman smiles ruefully. "Nevertheless, when flower growers get together nowadays, all they talk about is disease. One man got up at a Gladiolus Growers' meeting recently and said disgustedly, 'I'm going to start a new society where we can talk about the beauty of flowers and the fun of growing them—and not just about disease.'"

"There is a direct relation, I feel sure," Mr. Wallace contends, "between the increase in plant disease and the use of chemical fertilizers and sprays." His conclusion was reached independently of the identical discovery by *Organic Gardening*. Perhaps it is fortunate that Gerald Wallace was not "trained" as a nurseryman. As a farm lad, thirty-six years ago, he "hit the rails" for the allurements of the Far West. Hunger prompted him to make a "brief" stop-over in Batavia. His first gardening job, in return for a meal, was planting corn for a woman who lived near the tracks. One such job led to another, and—as he says—"I've been gardening hereabouts ever since."

His gardening philosophy is as logical as it is simple. "Plants are like people," he explains. "In order to live, they first must have air, second they need water, and only lastly—food. If you take care of their requirements in that order, gardening is simple—and lots of fun."

Mr. Wallace is particularly interested in plants which multiply through root division. (He even propagates strawberries by this method). "Anyone," he says, "can grow flowers from seed."

"The first job of a good gardener," he advises, "is to aerate the soil. In heavy soils, this means spading in plenty of sand and humus to loosen it up. Rain, as well as air, now can penetrate the soil instead of running off the surface." This process therefore, takes care of the first two plant requirements. "The more humus you add to the soil," Mr. Wallace explains, "the more moisture it will hold in times of dry weather."

Mr. Wallace does not believe in prolific "watering," except for well-used lawns. This

Gerald Wallace pointing to a bed of young pyrethrum plants. Larger plants on the right were treated with compost only. Those on the left were untreated. All plants were started at the same time.

practice, he has found, keeps plant roots near the surface and therefore dependent upon constant watering. If the soil is loose and "friable," he says, the roots when left alone, will reach down in search of water.

The next stage, for most gardeners, is the adding of chemical fertilizers. "Don't do it," is Mr. Wallace's emphatic advice. "Just go ahead and plant."

The third step, however, is most important, according to this nurseryman. Aerate, plant—then, transplant. Whenever a plant is ready to be divided (usually annually), Mr. Wallace transplants it to another part of the garden. This for two reasons. "Disease organisms which prefer one type of plant tend to accumulate in that area if the plant is left too long in one spot," he has found. Playing hide and seek with these organisms, though transplanting, discourages them.

Also, transplanting adds food to the soil. "A plant," Mr. Wallace believes, "is its own food factory, taking energy from the air as well as the soil." Much of this energy is stored in infinitesimal rootlets, he points out, many of which remain in the soil when the plant is removed. Thus the soil is enriched and a banquet prepared for the incoming tenant. Also different plants add minerals, such as nitrogen. Shifting plants about, therefore, tends to build up and equalize the mineral content of the garden.

Mr. Wallace has one more important gardening rule: "Everything which comes from the soil should go back to the soil." He tosses all trash—dead stalks, lawn clippings, leaves, etc.—even diseased plants (there always, of course, are a few)—into a corner heap. Here it is forgotten for two years.* Nature, in the meantime, breaks down the fibrous structures into soft, usable humus. At the same time, he says, bacterial action destroys the disease organisms. The humus is now ready to be returned to the soil to assist in the three-fold process of aeration, moisture-collection and feeding.

"Nature, herself, is the best gardener," Mr. Wallace believes. "She is also the best teacher." If Gerald Wallace is a stubborn person with "queer" ideas about growing things, it is because he listens to Nature instead of to man. Actually, his method of gardening is Nature's own—somewhat refined. She's been at it long enough, he contends, to teach him a thing or two. Wallace Gardens, obviously, are proof of the pudding.

* *Editor's Note*:—Compost can be made in less than a month by shredding and thoroughly mixing the materials to be composted. See the New Methods of Making Compost described in the December, 1949, issue of *Organic Gardening* magazine.

McFarland Co.

Chinese Cabbage with a border of strawberries, regular cabbage in the background.

CHINESE CABBAGE

A Chinese plant that made good in America.

By DR. LEWIS E. THEISS

CONSERVATISM is probably a good thing for the gardener. It prevents him from starting his garden at the first warm breath of spring and thereby inviting misfortune. It also insures his growing vegetables that he knows he can produce. And that prevents other misfortunes. But no gardener should be so conservative that he refuses to grow plants just because they are new to him—at least, he should not if he wishes to get the maximum pleasure out of gardening. For there is more to growing plants than the mere production of food. It is a great pleasure to watch the unfolding and development of the different varieties of plants one grows, to note their characteristics and peculiarities, and to assist them to attain the best possible development.

Something New in Cabbage

In respect to this phase of gardening, every gardener should welcome the opportunity to grow a product that is new to him, that may possess great beauty of form, or flower, or final product, especially if, at the same time, he secures a worth-while addition to his dietary. The wise gardener, therefore, will make it part of his garden practice to do some exploring every year with the hoe. Being properly conservative, he will desire to know what worth-while plants he may raise that give assurance of success. A good thing to do is to try out one new product at a time.

One that can be tried with good prospect of success is the so-called "Chinese cabbage." Although this is now frequently seen in green goods markets, relatively few Americans grow it. Yet it is easy to produce and it furnishes a useful addition to the dietary.

Cylindrical Heads

It is not a true cabbage at all, but it grows exactly like a cabbage, with the inner leaves folding tightly around one another, so that they blanch out attractively like the heart of a true cabbage or a head of lettuce. The obvious difference between this vegetable and a true cabbage is in its shape.

The Chinese product is tall, relatively thin, and cylindrical. When the flaring outer green leaves are stripped off, the inner product is a gleaming white cylinder that tapers at the top. The size of this vegetable cylinder will vary according to the variety grown, the length of time it is permitted to grow, and the richness of the soil in which it is raised.

More than thirty years ago, when American gardeners knew absolutely nothing about this vegetable, I secured seed of it through an importing house and was delighted with the product. Today, one can buy seeds of three different varieties. They are offered by a number of nurserymen, although some seedsmen offer but two sorts. The three are Pe-Tsai, Chihli and Wong Bok.

I first grew Pe-Tsai. It produced a large, tall head, fully eighteen inches high. Ordinary cabbage heads are round or roundish. Indeed, this is so characteristic of common cabbage that several varieties are named accordingly, as Danish ball head. If you can imagine such a head squeezed tightly until it stretches up to a height of a foot or eighteen inches and is narrowed to a width of four or five inches, you have a picture of Pe-Tsai. The outer leaves are flaring, but when they are stripped away there remains the attractive white vegetable cylinder within. Chihli and Wong Bok are somewhat similar but smaller.

Easier to Grow

A good reason to start with this vegetable when exploring with the hoe, is that it is extremely easy to grow. When one observes the cultural directions, it comes close to being foolproof. But one feature about it is to be observed scrupulously. It cannot be grown like ordinary cabbage, with seedlings started early in the season. When it is sown early, it inevitably goes to seed. So one does not plant the seed until about the first of July. However, one should consider the nature of his soil. In poor ground, or in a very dry season, it may grow so slowly that it will not head satisfactorily before fall. So it might be well to chance planting it just a trifle sooner—say by June 20 or even June 15. A little experience will tell the gardener what to do in his own garden.

Thin to Permit Vigorous Growth

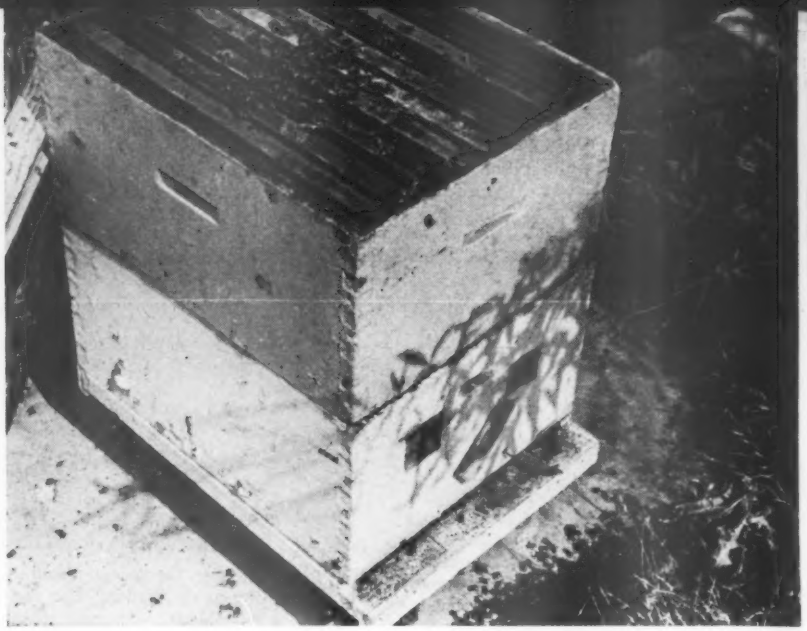
Chinese cabbage is a vigorous grower. It springs up almost overnight. The seeds look much like ordinary cabbage seeds. Their small size makes it difficult to plant them thinly enough. And after they have sprouted, they shoot up so fast that, if a long rainy spell keeps one out of the garden, one can hardly get them thinned out soon enough. Inasmuch as these plants should be grown not closer together than a foot to fifteen inches, I have found it advisable to drop two or three seeds in a group, with four to six inches between groups. Another way, of course, is to mix the seeds with sand before planting and thus insure wider spacing of the seeds, as one often does with carrot seeds, etc. At any rate, no matter how sown, get the plants thinned promptly and allow plenty of space between those left. They can be four to six inches apart. Later thinning can space them to the final measurement.

Conserve Soil Moisture by Mulching

Like other leaf vegetables, the Chinese cabbage is largely water. Hence it needs much moisture in the soil. A part of its culture, of course, is in the general handling of the ground in one's garden. The constant addition of compost and humus makes the soil able to absorb and retain great quantities of water. Wise garden practice will prevent the evaporation of that soil moisture. Mulching is, of course, the proper practice. If one cannot provide any other form of mulch, a good dust mulch is fairly effective. That requires constant cultivation. But a mulch of leaves or straw or other similar materials is preferable. Then there is no danger of injuring the plant roots by cultivation, or of breaking off the spreading rosette of lower leaves. So far as I have observed, the Chinese cabbage is little affected by insects. Like onions, beets, carrots and such vegetables, which require little ground, a row of these rather compact Chinese cabbages can be grown quite close to rows of other products.

Health Values

Probably every gardener takes pride in producing vegetables that call forth flattering interest on the part of fellow gardeners. Unusual food plants in one's garden always command the attention of other vegetable growers. There may also be another reason why one may wish to grow new sorts of vegetables. Although we may not know exactly what minerals different food plants deposit in their tissues, we do know that plants vary in respect to their own food requirements. By eating a larger number of varieties of food plants, one inevitably secures a larger variety of food elements himself. This may be important in the matter of health. Thus, for many reasons, it is worth while to go exploring with the hoe.



Entire bee colonies may be killed out by field spraying.

ARE BEES SAFE?

Poisonous sprays are not for the bees.

By JOHN E. ECKERT, Ph.D.
Professor of Entomology and Apiculturist, University of California

THE honey bee is susceptible to most of the insecticides used as stomach or contact poisons, or as fumigants in controlling injurious insects. The honey bee also is injured in its adult and brood stages by certain plants that produce toxic substances. Fortunately, poisonous plants are limited to a small number of species occurring in relatively few areas in the United States, and are not equally dangerous in successive years. Chemical injury, on the other hand, is widespread and may occur in any area where quantities of insecticides are applied.

The pollination service of the honey bee ranks in importance with proper planting, cultivating, and harvesting of at least fifty of our agricultural crops. Consequently, the loss of bees by chemical or plant poisoning may mean a reduction in the crops which are benefited by bees. In addition the constant use of insecticides kills many insect pollinators other than the honey bees, thus increasing the need for the honey bee, the chief insect which can be produced for pollination purposes.

To the beekeeper the killing of bees by chemical or plant poisons means a monetary loss that varies with the severity of the damage. Many thousands of colonies are destroyed annually by chemicals in Washington, Utah, California, Arkansas, Arizona, Texas, and Louisiana, and considerable damage is done elsewhere. In addition, the numerical strength of many colonies is reduced so that honey production and pollination services are greatly lowered. Often beekeepers must seek new locations because of the hazards of poisoning, frequently overcrowding the floral sources in other regions and reducing the honey secured by resident beekeepers. Thus bee poisoning in one area affects beekeepers in another.

Condensed from The Hive and the Honey Bee, Dadant and Sons.

Dead bees around hive the day after calcium arsenate dust was spread by airplane over surrounding fields.

No Danger of Producing Poisoned Honey

With so many chemicals injurious to bees being applied to cultivated crops, one might suppose that honey would contain some of the poisons. However, this is not the case because bees affected by poisons do not behave in a normal manner. Instead of returning to their hives, they apparently attempt to throw off the effects of the poisons and either become lost or die in the field. In the cases of the quick-acting poisons, such as sabadilla or arsenicals and those that affect the bees through fumigant action, bees can be found hanging on plants and on the ground beneath the plants treated. In the case of DDT, the bees run and fly in a frenzied manner when they feel its chemical effects. As with many other poisons, the population of the hive may be reduced without many dead bees accumulating before the entrances.

Should the bees return to the hive with a load of poisoned nectar, there is a double provision that none of it will get into the stored honey. The hive bees rehandle every drop of nectar, and so are exposed to the poison longer than the field bees. Hive bees have the tendency to leave the hive when they feel the effects of poison, and in this way would carry from the hive any poisoned nectar they might have taken into their stomachs. Further, chemical analyses of honeys, extracted from the brood combs of colonies affected by arsenical poisoning, have failed to reveal any trace of arsenic. *

Although most chemicals used as insecticides are harmful to the honey bees, some are more toxic than others. Calcium arsenate, lead arsenate, and Paris green are particularly injurious, even in minute quantities. Cryolite, sometimes used as a substitute for calcium and lead arsenate, is less toxic than the arsenicals under field conditions. In the citrus regions of California, however, cryolite has been the cause of heavy losses of bees. Pyrethrum, derris, and rotenone dusts are definitely injurious, but less so than arsenicals. Nicotine compounds, such as nicotine sulphate and Nico-dust, are toxic but serve as bee repellents. When applied under certain climatic conditions, however, Nico-dust has killed the field force of an entire apiary.

The Hydrocarbons, like DDT, DDD, and chlordane act both as stomach poisons and as contact poisons. Bees that are dusted with material containing as little as 1 per cent of DDT may die within a few hours; those that walk over a surface sprayed with a 2 per cent solution will die within 12 hours if they remain in contact with the surface for 20 or 30 minutes. The material is rather

(*Continued on page* 52)

* *Ed. Note—We are not thoroughly convinced that poison sprays do not contaminate honey.*

CONSIDER THE EARTHWORM

An important factor in enriching the soil.

By CHARLES E. BOOTH

HOW valuable is the lowly earthworm to our farms and gardens? To the wise farmer and gardener, it is worth serious consideration. It is a proven fact that the presence of earthworms in the fields and gardens is an important factor in enriching the soil.

So common is the knowledge that earthworms are to be found in all types of soil, that little or no attention is given to them. Many soil scientists do not give any credit to them for bettering the soil, but without them, few plants would survive. The recently introduced "domesticated" earthworms are raised not only for experimental purposes, but as a profitable business. Earthworm farms throughout the United States supply farmers and gardeners with worms with which to enrich poor soil.

There is sound reason to believe that earthworms really do help to produce better soil. Their job is to aerate the soil, turning it over and over, sifting and re-sifting it. In this manner, the soil is purified. During this process, they cast up little spiral-shaped hills of dirt. In rich soil, these earthworms number in the millions in each acre. Twenty or more tons of digested soil are brought to the surface of the ground each year.

Foods of Earthworms

The food of earthworms consists of soil mixed with vegetable matter. They do no harm whatever in their consumption of either the soil or the vegetable matter. This turning of the soil is done to a depth of six feet beneath the surface of the ground and the tunneling that is done by them provides storage pockets for water seepage. This, in turn, results in providing space for plants and crops to grow with their roots downward, insuring healthier growth.

Earthworms Improve the Physical Condition of the Soil

In poor clay-like soil, where earthworms are not plentiful, a hard surface crust results. Such soil cannot be cultivated and remains useless. Experiments with domesticated earthworms prove that if enough of them are planted in soil of this type, they will add greatly to its productive quality. Many rural dwellers as well as city gardeners are discovering the value of earthworms in the soil. The great harm which is brought about by using chemical fertilizers in the growing of crops has been brought to light. Such methods of fertilizing crops soon wear out the soil and reduce the native population tremendously. The real truth of the matter is that earthworms play a most important part in the growing of every sort of vegetation and the time has come at last when this fact is recognized.

Earthworm Balance

There are some persons who are of the opinion that earthworms can become too numerous. This belief is not very probable,

however, because nature has provided for such conditions. Nearly all of our native song birds as well as many game birds feed upon them and keep a natural balance among the population. On the other hand, no one need worry about such birds taking more than their share of earthworms. Nature has provided well in these respects and there are plenty of earthworms to go around.

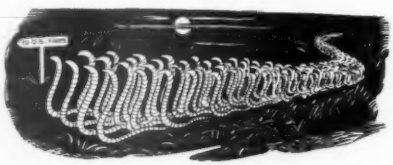
Protective Mulches Are Important

Wherever a mulch is used in the garden or in the field, earthworms will survive through the heat of summer and cold of winter. Where growing plants are found, the use of a mulch is not essential. However,

in open ground a mulch will provide shelter for the earthworms. Where little or no ground cover is found, the worms find it difficult to survive. Heavy rains, penetrating into the soil, will either destroy them or drive them out. Cold weather will do the same. When exposed for any length of time to the hot rays of the sun, their bodies will dry up and result in their death. Often such conditions will force them to tunnel to the surface and seek other, more protective ground. From these facts, the use of some type of a mulch is recommended.

During the winter months, earthworms hibernate below the frost line, and here they stay until warm weather beckons them to begin their work of sifting the soil. In dry spells, when the earth loses its moisture, they coil up and pack dirt around themselves with aid of their body moisture and wait for rain. They are able to protect themselves in this manner for an unbelievable period of time.

Often one area becomes over-crowded with earthworms. When this happens, nature takes over and warns them. The worms then migrate to other feeding grounds, sometimes to great distances. Such migrations take place only at night, as the sun would dry their skins and kill them. At times, they will migrate after a heavy rainstorm. The usual procedure, however, is by night. In the warm months, they are found about a foot and a half below the ground.



Earthworms Increase Soil Moisture and Aeration

In the United States earthworms rarely reach a length over one foot, but in South America and Australia they attain lengths of five and ten feet. In North America there are some ninety-odd species to be found. The length of the worms has little or nothing to do with the value of their work. We know that without them, the earth would not produce the so-called "bumper crops." Their underground activities are badly needed in any type of soil. The gentle spring rains would bring no water to the plants without the work of these allies. The top soil would become hardpan and the rain could not penetrate into the subsoil.

Earthworms tunnel close to growing plants while in the process of aerating the soil, but never too close so as to destroy the roots. Under favorable conditions, they will multiply rapidly, but not too rapidly. No plow or machine can duplicate the valuable work of the earthworm and its efforts are strengthened by thousands of other worms, all doing the same kind of work.

Earthworms as Soil Builders

Charles Darwin once estimated that in an average acre of garden soil some fifty-three thousand earthworms can be found. Through the bodies of these worms some ten tons of soil pass each year. By the use of a group of suction muscles earthworms fill their alimentary tubes with earth in which are scattered particles of animal and vegetable matter. The food passes into the crop for storage. Then it goes to the gizzard, where it is thoroughly ground. Tiny grains of sand are swallowed with the food to help the grinding process. The food is finally digested and absorbed into the earthworms' systems. Vegetable mold is brought to the surface of the ground.

Since earthworms have no eyes, they of course cannot see. They are capable of distinguishing between light and darkness, however. They can also recognize sounds and smells. This is all due to super-sensitive cells on the surface of their bodies. In short, earthworms are a wonderful creation and every farmer and gardener should have a knowledge of their habits and their value.

The study of the earthworm has become a major issue in modern agriculture. Many persons are recognizing the fact that poor soil can be enriched by planting earthworms in it.* They know that as a tiller of the soil, there is none better than the earthworm. Domestic or wild, they have turned waste into fertile gardens and have proved that their former title of "lowly earthworms" should be changed to "valuable earthworms." Consider the earthworm—if your garden needs a "shot in the arm," try employing some of these expert plowmen; they work free, cause no trouble to you or your plants, and best of all, they bring results.

* *Editor's Note—The soil must contain raw organic matter to serve as food for its earthworm inhabitants.*

SPRAY OFF THE BARK

Expose unfriendly insects to forces of nature.

By JAMES S. AYARS

Condensed from *Country Gentlemen*

THAT'S what Dwight Powell of the University of Illinois told applegrowers four years ago. Spray off the loose and rough bark and get rid of a large number of codling-moth larvae.

Stewart C. Chandler, Illinois Natural History Survey entomologist, has since been preaching the merits of this "barking off" method throughout the orchard section of Southern Illinois. He points out that smooth-barked trees offer no place for codling-moth larvae to build cocoons. In a newly barked-off orchard, many of the first-generation larvae that leave the apples, on the ground or in the trees (usually sometime in June), start out on rather hopeless house hunts. Finding no bark homesites, they may take shelter in the 2-by-4-inch-wide bands of chemically treated corrugated paper that can be wrapped around apple trees. Here they die from the effects of naphthalene or other chemical in the paper.

Not only does removal of the bark leave few homesites for larvae and give a smooth surface for applying the bands, it even kills large numbers of codling-moth larvae or pupae, and so reduces the number of moths that will lay eggs from which apple-eating worms will emerge. Experiments have shown that up to 80 per cent of the overwintering larvae in an apple orchard can be destroyed by "barking off" and other similar measures.

Since barking off by hand has long been a tedious job, Powell proposed using a standard orchard sprayer and a standard spray gun with an 8/64-inch opening—number 8 disk. The sprayer should be operated at 500 to 600 pounds' pressure and a stream of water directed against the tree trunk and large branches where bark is loose or rough. The loose bark will fly off in all directions as you move swiftly around the tree.

Do not hold the stream against any part of the tree for long or it may tear through the live bark. In some cases, the pressure should be reduced to avoid injury to live bark. Hold the nozzle about two to four feet away from the tree and play the stream of water on dead leaves, loose bark and punky wood in crotches and shallow cavities. Sweep them away from the tree at the ground line. When spraying around the bottom of the trunk, direct the stream of water downward at an angle of about 45 degrees to prevent exposing too much of the crown to weather.

Not only does the spraying do a superior job of killing codling-moth larvae; it also does a more thorough cleaning job in the crotches and punky areas. And it is three or four times as fast as hand barking off. A well directed stream of water can smooth up a mature tree in two to four minutes; a young tree in one minute or less. Also, it can smooth off high branches more easily.

What is the best time to spray off the bark? Any time is better than not doing it, but the job should be completed before the moths begin to emerge from the pupae about the time of full bloom. The best time is in spring just after most of the larvae have become pupae. Slight pressure will kill the pupae, and large numbers of them will be destroyed by the stream of water that knocks the loose bark off the trees.

(Mr. Ayars is technical editor for the Illinois Natural History Survey at Urbana, Illinois.)

Seed heads of sunflower.
Left: Organically grown. Right: Fertilized with chemicals.

MAGIC OF COMPOST AND MULCH

Restore the soil to full production.

By EDWIN H. ABRAMS

THE generous use of scientifically made compost for the past few years, combined with mulch, has brought such amazing results that even now I can scarcely believe my own eyes when realizing the contrast between my garden of yesterday and today. Though I had made use of leaves and other vegetation for many years, it was only after becoming a reader of the *Organic Gardening* Magazine and learning about the Indore method that the making of compost constituted a major operation with me.

The tendency seems to be to use too thin a covering of mulch. For some time I have been using more and more mulch on fruit, vegetables and trees, and to a corresponding degree find less and less weeding to do. Ten wheelbarrow loads of compost were placed under one grapefruit tree, and over this several inches of leaves. From time to time as leaves accumulated from nearby trees, more mulch was placed under this tree. This season the tree produced more fruit than any previous year. It takes a lot of compost to fertilize all the garden and all the trees, but with half a dozen boxes going continuously, this is now being done. Heavily mulched potatoes and beans required practically no weeding, and have been free from worms; even cabbage came through the first planting without one worm being seen. Bean leaf rollers, which formerly were in evidence from morning until night, laying thousands of eggs, were absent. One of the butterflies only was observed from the time of planting until the last bean was picked, but no eggs were to be found.

Can mulching be overdone? So far as my experience goes, there seems to be no evidence that it can, or is likely to be. The job of accumulating enough mulch for all growing things in one's garden is so much of an undertaking that the gardener is fortunate if he can secure the minimum amount. As an experiment the writer tried using a large quantity of mulch on a papaya that had been uprooted by a heavy wind. It was at first decided to destroy the tree, as its roots were largely out of the ground. Instead of doing so, the tree was propped up at an angle of some 30 or 40 degrees, and many loads of compost and garden soil placed over the roots until it was well covered. When it was found that the tree was still alive, and even putting out new branches while bearing heavily, more and more mulch was added from time to time, and it made a surprising comeback.

It not only matured the large crop of fruit that it carried when overthrown, but actually put out several sturdy limbs and grew a large crop of good sized fruit on these in addition.

FLOWERS OF THE WIND (ANEMONE)

There is one for every garden location.

By G. L. WITTROCK

THE graceful Anemone is always admired whether growing in the native habitat or cultivated in a garden. This admiration dates back into the historical and classical literature of the past; the flowers are often mentioned in the Bible for their delicate beauty. The name, Anemone, has its origin in the Greek word, *anemos*: wind, referring to the genus because a number of species are at home in Asia Minor in elevated places where they are exposed to the sweeping winds, thus swaying gracefully to and fro, displaying their delicate tinted flowers. The ancients had many legends about the Anemone. Pliny records that the Anemone of the classics was referred to as the "Wind Flower" because it opened at the bid of the wind. This wind at one time was thought tainted as it passed over the flowers, and it was believed that disease would follow in its path. This belief may have been the basis for the Persians' use of the flower as an emblem of illness. The Greeks had a tradition that the plant sprang up from the passionate tears shed by Venus over the body of the slain Adonis.

The common name "Pasque Flower" is normally applied to old world species because the plants bloom at Easter time or during the Paschal season. In the old world, this group was also known as "Laughing Parsley" because when poisoned with it the victim would appear as though he were laughing during his convulsions and spasms. The ancients believed that the plant had great powers against venomous reptiles, mad dogs, gout and sciatica. The drug, Pulsatilla, is used, however, by herbalists for certain diseases of the eye, although it is considered somewhat dangerous.

In general, the Anemones are described as hardy and attractive flower-garden and border plants. The stems are usually erect, varying in height from dwarf size to tall, and when tall, having graceful stems. The leaves are merely lobed to divided and even deeply dissected; the stem leaves are sometimes clustered together to form a crown near the flower. All the species are hardy perennials, and generally cultivated for their snowy flowers, and even for their delicate finely cut leaves. The plants thrive best in fresh, rich, sandy loam that is well drained, although many will survive in any good garden soil. The tuberous species thrive best in a hardy border. Most of the other species fit in a rockery, and some are at home in partial shade.

Propagation, in general, is both by root division and by seed. The root method is best done in early spring before growth starts. Seeds are sown very shallow in a finely raked bed during the fall or in early spring. The good months for planting Anemones are September, October, November, December, February and March. The showy horticultural forms are divided into three sections: 1. The early spring Pulsatilla group. 2. The tuberous group of spring and early summer. 3. The tall Japanese forms of the late summer and fall.

The Early Spring Pulsatilla Group

The early species known as *Anemone* (Pulsatilla) *vernalis* is very shaggy and about six inches high or less. The leaves are finely divided, and all the flowers are purplish without and whitish within, blooming in April. They thrive best in a cool, moist location in a rock garden, and are always an attraction because they herald spring with the robins. *Anemone patens* of Europe is smaller than our American variety, known as "American Pasque Flower." The plant is four to nine inches high. The bluish-purple or white flowers poke out of the soil before the root-leaves develop. The flower blooms in April. *Anemone Pulsatilla*, the true Pasque flower of Eurasia, has very silky hairs three-fourths to one inch long, and the flowers are blue to reddish purple one and one-half to two and one-half inches across, also blooming in early April. Many varieties and variegated forms in color are known. This Pulsatilla group thrives best in well drained soil or stony places.

The Tuberous Group of Spring and Early Summer

The tuberous group of Anemones bloom almost whenever desired, depending on the culture and the time the tubers are planted. In sections, where it is too cold in win-

Roche

Anemone in full bloom.

ter, bulbs or tubers should be cured or ripened after the flowering period by being lifted from the ground to dry and store. If left in the ground to cure they must be protected against excess moisture; the bulbs cannot stand frost. The tubers are of unusual structure, some resembling a three-cornered horn. Florists use this group extensively indoors for late winter and early spring blooms, these being started in autumn in flats, and controlled like a bulb plant. The species is known as *Anemone coronaria* and in common terms as "Poppy-flowered Anemone." The flowers are deeply cut, one and one-half to two and one-half inches across, and poppy-like in appearance, being found in many colors and mixtures of colors from blue, white and red, with the anthers of the stamens blue. Many controlled varieties are listed, such as "Caen," "Scarlet" and "Victoria Giant;" these are single forms. Many double forms are also to be had in a variety of colors, although the scarlet colored are the most dominant. One variety known as *Anemone coronaria* var. *chrysanthemiflora* is a seedling produced in 1848, looking much like a full chrysanthemum.

The Tall Japanese Forms

The tall Anemones of late summer and fall are the Japanese forms called *Anemone japonica*. These are two to four feet tall with long slender flexible stems bearing white and rosy-purple to carmine flowers two to three inches across. These are excellent to use in a hardy border or colony. They bloom from September to late frost. Many beautiful varieties of the group, are to be had, particularly in the white color from the variety *alba*: such are "Coupe d' Argent" and "Whirlwind." If you are not acquainted with the Anemones and see them for the first time, you will indeed be tempted to try them and include the various forms in your garden.

THE VEGETABLE GARDEN
(PART V)

The Natural Control of Pests
(Concluded)

By WILLIAM H. EYSTER, Ph.D.

Antagonisms in Pest Control

IT IS a common observation in pot experiments that certain diseases, such as the root rots of cereals, are more destructive in sterilized soil than in comparable non-sterilized soil, both being equally inoculated with pathogenes. If bits of the original soil are introduced into the sterilized soil, however, the micro-flora are quickly reestablished, the pathogene checked, and the disease reduced. This would seem to indicate that the micro-organisms in the soil protect plants against certain soil-borne pathogenes or limit their damage. Soil treatments which favor the growth of these soil organisms enhance the natural biological control of certain pathogenes. This has proved to be true for the control of cotton root rot and of cereal root rots by introducing organic manures, of potato scab by green manuring, and of Rhizoctonia damping-off by acidifying the soil surface layer.

It has been found that a heavy mulch reduces root-knot injury to plants by nematodes. According to Thorne, when a crop of sweet clover is plowed under the heat and gas from the decaying materials kill large numbers of nematodes, including cysts. Linford reported that the decomposition of large amounts of organic matter in Hawaiian soils was associated with a reduction of galls on roots of cowpeas. The decomposition of organic matter results in an increase of nema-trapping fungi, fungus parasites, predaceous nematodes and predaceous mites. It seems possible that the beneficial effect of the mulch in reducing root-knot injury results from some metabolic by-product in the decomposition of the organic matter, to the stimulation of some organisms antagonistic to the parasitic nematode, or to an improved fertility condition which permits growth of the plant in spite of the parasitic nematode.

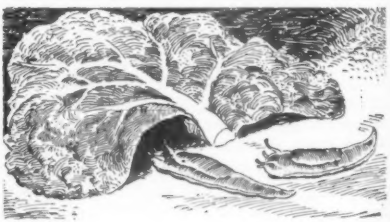
Howardula benigna is a nematode which is parasitic on the larvae and adults of several species of cucumber beetles. As many as 13,000 nema larvae have been removed from the body cavity of a single beetle.

Baits and Traps

Pests which occur in sufficiently large numbers may be caught in appropriate traps baited with such substances as geranium oil for Japanese beetles and sassafras oil for codling moth. A solid bait for codling moth may be made by filling a small ice cream cup two-thirds full of sawdust, stirring into the sawdust a teaspoonful of sassafras oil and a tablespoonful of glacial acetic acid, and then adding enough liquid glue to thoroughly saturate the sawdust mixture. When the cup is dry, after a day or two, suspend it in a mason jar partly filled with water.

Daylight blue lamps attract moths from long distances. Other insects which can be trapped with a blue lamp include corn borer, cutworm, tomato worm, and cabbage worm.

Mealy bugs may be cleaned off special plants with a cotton swab soaked with alcohol.



An inverted cabbage leaf makes a good trap for snails and slugs, and other pests which hide during the day but forage on garden plants at night.

Control of Selected Pests

Japanese beetles were imported into this country without their natural enemies. This enabled them to increase rapidly and migrate

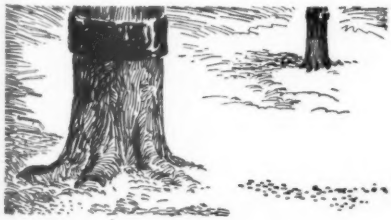
over wide areas of Eastern United States in an amazingly short time. They are unrestrained by their natural enemies and thus illustrate an organism out of natural balance. Antagonistic organisms which have been introduced into this country to restore some kind of balance include the bacterium, *Bacillus popilliae*, which causes the "milky disease" of the larvae of the Japanese beetle, and a number of wasps which are parasitic on this problem beetle.

C. E. Holmes states that since he has used compost, he has eradicated nematodes from 16 gardens spread over his estate of 2,000 acres. Other gardeners have reported similar results when composts are used. It has been suggested that the natural food of problem-nematodes is compost, and it is only when this food is lacking in the soil that the nematodes attack the roots of plants. There are some 25 species of fungi which are capable of attacking and feeding on nematodes. Doubtless these fungi live only in soils with a sufficient amount of organic matter.

Not all nematodes are pests. Reference has already been made to a nematode which lives as a parasite on several species of cucumber beetles. Four species of nematodes and one specie of tachinid fly were found to parasitize the adults of the southern corn rootworm.

Crawling insects, as ants for example, can be kept off plants by banding them. Aphids are over-wintered in the subterranean caverns of ants. In the spring, the ants carry these aphids out of the ground and place them on the young leaves of all kinds of plants. The aphids suck the juices from the plants, while the ants use for food the "honey dew" which is excreted by the aphids.

A suitable band or girdle to prevent ants and other crawling insects from establishing aphids and other pests on the leaves of trees may be made as follows. First put around the trunk a girdle of cotton. Over the cotton, place a girdle or band of roofing paper which can be secured by the use of small box nails. Then with a brush, apply tree tangle foot over the band of roofing. The tangle foot may have to be renewed from time to time to prevent crawling insects from crossing over the girdle on the dead bodies of those which tried to cross the girdle before them.



Many other examples of control of any particular kind of insect could be given, but those mentioned may serve to indicate the importance and value of this method of control.

Insecticides

In the light of what has been said about the balance of organisms in nature, it is difficult to justify the use of insecticides. If pests and diseases are Nature's censors or indicators that something is wrong with our cultural practices, should we not change our practices rather than kill the pests?

The objections to the use of insecticides are legion. Many insecticides kill beneficial as well as obnoxious insects, and there may be hundreds of beneficial insects for each injurious one. Many insecticides are toxic to birds, toads and other insectivorous animals. How many of these animals are killed by the poisons in or on the bodies of insects is not known.

The drip of some insecticides from the trees kill organisms in the soil. Such poisons as arsenic and DDT accumulate in the soil until they become lethal to the beneficial soil organisms. A. C. Foster, working with a wide range of dosages of insecticides at the United States Department of Plant Industry Station, Beltsville, Maryland, has found that some of the new insecticides remain surprisingly toxic in the soil, while others do not. One hundred pounds of DDT per acre or more applied to soil in 1945 had lost little of its toxic effect when tested in 1951. Smaller amounts applied to crops as needed to control insects accumulate in the soil over the years. All but three of 17 garden and field crops grown in greenhouse trials showed some sensitivity to DDT and seven were classed as highly sensitive.

The poisons used for killing insects and preventing fungus diseases are never completely removed from the vegetables and fruits which are used for foods. Who knows the damage to health that is caused by the arsenic, DDT, parathion, and other toxic substances?

It is a source of great satisfaction, at least, to know that vegetables and fruits can be grown in the home garden without the use of highly toxic materials. This is not merely theory or wishful thinking, because thousands of organic gardeners do it every year. For my part, I would rather match my wits with the insects in the garden on a natural basis than risk my health that is surely threatened when poisoned foods are eaten.

McFarland Co.

Tying celery for blanching.

CELERY

A difficult plant made easy when grown organically.

By JAMES G. ESSON

ALL WHO have become expert in growing this vegetable agree that home grown stalks are superior in flavor to anything offered at the food market. We should say, however, that it might be termed a comparatively long season crop requiring more labor and care than other vegetables. A rich loamy soil, well drained, but always rather moist, and a sunny location are essential requirements for success.

There are two main groups of varieties one to be harvested in summer and early fall, the other in fall and winter.

Sowing the Seeds

The seed of this vegetable may carry diseases, so it is important to purchase from a reliable source. Since there are several thousand seeds to an ounce, the smallest packet offered by the seedsman should be enough for any home garden. If early varieties are required, it is better to germinate the seeds in a warm room, allowing 10-12 weeks for plants to be large enough for planting in the garden. Later varieties can be started in a cold frame or in a protected area outdoors, reckoning on 5-6 months from seed time to the beginning of harvest. The soil for germination should be well drained and passed through a one-fourth inch mesh sieve. A mixture of equal parts of good garden soil and leafmold or peat, mixing in some sharp sand if the soil is clay, should be adequate. Some gardeners advocate the use of further leafmold as a top layer or seedbed. This will prevent a crust on the surface which impedes germination. Sow the seeds thinly over the surface and be careful when covering them with soil. They will not germinate unless sown practically on the surface, so, a sprinkling for the purpose of keeping them in position will suffice.

As soon as germination appears the seedlings should be exposed to full light to en-

James G. Esson is a professional gardener, taught in organically-minded Scottish country. He has served as Editor of Gardeners' Chronicles of America from 1942 to 1950 and as the official Garden Consultant to the Horticultural Society of New York.

Rolls of bleaching paper are placed along side the stalks about ten days before cutting. The paper bleaches the celery pure white, getting it ready for cutting right on schedule.

courage sturdy growth. Spindly seedlings are always weak and subject to disease. Even at this stage a steady supply of moisture is important. Dryness of the soil around the roots may result in "bolting"—meaning the production of flowers during Summer and resulting in inedible plants.

Transplanting

To prevent crowding, the seedlings should be transplanted 3-4 inches apart into rich loamy soil in flats or in a frame. Shade and prevent currents of air until symptoms of growth are shown.

Various methods of culture in the garden have been practiced with success. All are agreed that rich organic matter incorporated in liberal quantity into a sufficient depth of soil to conserve moisture is paramount. And, of course, drainage promotes the availability of necessary food elements.

It is the method of approach that is varied. Some gardeners believe in digging out a trench leaving the top spade depth equally divided on either side. Organic matter is dug into the stratum immediately below. When the trench is made 18 inches wide there will be ample room for three rows spaced six inches apart. If the length of one trench is not enough, a second may be made allowing two feet between them. On the two foot area a row of spinach can be sown in spring or early maturing lettuce may be planted. This is a method of conserving space which is a consideration in most gardens. Besides this, some gardeners use the trench for peas sown in March followed by the celery planted in late June or July, thus taking two crops in one year from the same area. After the pea haulms are removed to the compost heap, and before planting the celery, loosen the soil in the trench by forking it over and possibly adding five pounds to 100 square feet of bone meal. As the growing season advances the soil from the ridged area is used for blanching the stalks.

The foregoing is the older method of celery culture, but many believe today that they get equally good results by planting on level land in rows 18 inches apart. Where the soil is of a clay nature this method tends to accelerate drainage as blanching progresses. Blanching can be done in more restricted areas when paper is used instead of soil. Besides it is contended that surface planting entails much less labor. It is true, too, that many home gardeners have little more than a spade depth of soil in which to work and deepening would tie up more labor and organic matter than economy would allow.

Fertilizer

Roots of celery do not travel far but utilize food greedily where they are. Undoubtedly nothing provides all their needs more completely than decayed farmyard manure. We have seen celery plants set in a mixture of 90 per cent old farmyard manure and 10 per cent garden soil and they grew luxuriantly. This manure is not available to the average gardener, but he will find that good compost or thoroughly broken down leafmold are good substitutes. Add to this bone meal in quantity as recommended above. Dry chicken manure is also valuable and can be used either by digging in 51 pounds to 100-square-feet before planting, or by spreading it on the surface near the plants. Here the elements will wash in. It is extremely high in nitrogen. Unless the soil is very acid, lime should be avoided.

Mulching

Celery is a heavy feeder and requires much water. It is important, therefore, to prevent as much as possible the evaporation of water from the surface of the soil. Soil moisture can be best and easiest conserved by a suitable mulch which will also prevent the growth of weeds and contribute to blanching the celery leaves. Suitable mulching materials are ground corncobs, shredded leaves mixed with some sawdust, and such materials are shredded hay and straw.

Blanching *

Whether in trenches or on the surface the procedure will be to exclude light from the stalks, while leaving the tops exposed as long as there is sufficient warmth for growth. A beginning can be made when the plants are 12 to 15 inches high. Surface plantations sometimes have boards set along the side of the row to hold the soil, but it is usually possible to bank it around the plants without them. Suckers should first be removed and the outer stalks drawn close to protect the center. Bank the soil around loosely so that the plant can expand. It is better to do this work when the soil is not very wet and when the stalks are dry. Continue the process as soon as there is sufficient further growth. Early varieties such as Golden Plume are fit for use two or three weeks after blanching.

Blanching can also be accomplished by rolling the stalks in paper. Sometimes heavy roofing paper that is not impregnated with tar is used, but newspaper folded to the depth required and tied around the plants will do the trick. This method is recommended only for celery that is used before frost.

When Fall approaches we must guard against frost by having dry straw or other protective litter ready to cover the tops when the temperature is likely to drop below freezing. It should be removed if further mild weather comes along. The good growth of celery at this time is surprising, but if the tops are frosted it will not keep well.

Storage

Except in colder regions where frost pierces the ground to a great depth, celery is much better left in the ground and protected by a heavy covering of leaves or straw. Handled in this way it is crisp, tender and delicious from Christmas through to Easter. Few people can provide the temperature and humidity it requires when lifted and placed in storage. Nor is it an adaptable vegetable for the deep freeze unit.

Insects and Diseases

Few insects attack celery. Among the most common are the celery caterpillar and celery tier. Usually both can be controlled by hand picking.

Leaf spot, rust and the blights are diseases sometimes noted. Good seed and clean cultural practice do much to lessen their attacks. High humidity encourages the blights and they are not easily disposed of unless the weather becomes cool and dry.

* Blanching makes your celery beautiful, but it certainly cuts down on the vitamin content. Organically-grown celery will taste good even without the white interior.

Soil and Health Foundation

THE membership in the SOIL AND HEALTH FOUNDATION is made up of approximately 1200 contributors, many of whom contribute regularly so that the aims and purposes of the Foundation may be carried out.

At the present time a series of especially constructed fertilizer plots are being established. These are permanent plots and will be continued over a long period of time. The Foundation is also making cooperative arrangements with Colleges and Agricultural Experiment Stations for investigating such fundamental problems as the agricultural value of natural potash-bearing rocks and minerals and the natural control of garden and farm pests as will be announced later.

The ever increasing losses from our croplands of soil and nutrients which are being expressed in plants and animals including man as deficiency diseases make it urgent that the program of this Foundation be advanced as rapidly as possible. If you are not now a member, or if you have not made a contribution this year, I urge you to act at once. Contributions to non-profit organizations may be deducted on income tax returns. Send inquiries, helpful suggestions, and contributions to the Secretary.

SOIL AND HEALTH FOUNDATION
Emmaus, Pennsylvania

THE EFFECTS OF CHEMICAL FERTILIZERS

By WILLIAM H. EYSTER, Ph.D.

Q. What will a highly soluble acid fertilizer do to the soil?

A. The soil must be regarded as a living organism. An acid fertilizer, because of its acids, dissolves the cementing material, made from the dead bodies of soil organisms, which holds the rock particles together to form soil crumbs. It spoils the friability of the soil. On the surface of the soil such cement-free particles settle to form a compact, more or less water-impervious layer. This compact surface layer of rock particles encourages rain water to run off rather than to enter the soil.

Q. Is a formula like 5-10-5 to be regarded as a complete fertilizer?

A. No. This fertilizer contains the indicated amounts of nitrogen, phosphoric acid, and potash but may lack entirely the essential minor and trace elements.

Q. How does a highly soluble fertilizer like 5-10-5 or superphosphate affect the soil?

A. A highly soluble fertilizer goes into solution in the soil water rapidly so that much of it may be leached away without benefiting the plants at all. But the sodium in the fertilizer like sodium nitrate tends to accumulate in the soil where it combines with carbonic acid to form washing soda, sodium carbonate. This chemical causes the soil to assume a cement-like hardness.

Other minerals, when present in large concentrations, percolate into the subsoil where they interact with the colloidal clay to form impervious layers of precipitates, called hardpans.

Q. How do hardpans affect crop production?

A. Hardpans seal the topsoil off from the subsoil. Water cannot pass downward into the subsoil, and water from the water table cannot rise to the topsoil in which the plants are growing. Many plants cannot live when their roots are kept too wet. Then too, the subsoil below the hardpans is anaerobic and rapidly becomes acid. In such anaerobic acid soils, the soil organisms population changes radically and in ways which are unfavorable to crop plants.

Q. In what way does a highly soluble artificial fertilizer harm soil organisms?

A. Such highly soluble chemicals as chlorides and sulphates are poisonous to the beneficial soil organisms, but in small amounts act as stimulants. These chemicals stimulate the beneficial soil bacteria to such increased growth and reproduction that they use up the organic matter in the soil as food faster than it can be returned by present agricultural practices. When chemical residues accumulate in the soil, the microorganisms may be killed off by hydrolysis (water-removing). The high salt concentration in the soil water will pull water from the bacterial or fungal cells, causing them to collapse and die. Earthworms will also be poisoned by swallowing soil and humus particles coated with chemical residues.

Q. Do artificial fertilizers change the soil organisms population?

A. Yes. Many artificial fertilizers contain acids, as sulphuric acid and hydrochloric acid, which will increase the acidity of the soil. Changes in the soil acidity (pH) are accompanied by changes in the kinds of organisms which can live in the soil. Such changes often are sufficient to interfere greatly with the profitable growth of crop plants. For this reason, the artificial fertilizer people tell their customers to increase the organic matter content of the soil, thus offsetting the deleterious effects of these acids; also to use lime.

Q. Why will chemicals burn especially young, growing plants?

A. The burning is caused by salts pulling water out of the plant cells. When this happens they collapse and the plant turns brown

and dies. Older plants have more resistance to this type of burning.

Q. On the label of some raw phosphate rock, I read that it contains 30 per cent phosphoric acid. Does this not mean that the rock has been treated with an acid, and would be harmful to soil life and earthworms?

A. Due to the influence of the chemical fertilizer people, all fertilizing materials must be analyzed and the contents stated on the bag in regard to the available nutrient elements. The phosphoric acid on the label does not mean that the rock material actually contains this acid. What it really means is that the phosphate if converted to the acid form would have that content of phosphoric acid. In other words, in stating an analysis of phosphate, the fertilizer law requires that all phosphate fertilizers be expressed in the percentage of phosphoric acid or equivalent phosphorus pentoxide. Similarly, potash is expressed in the equivalent of potassium oxide (K_2O).

Q. Since nitrate of soda is a natural product, that is, not manufactured but mined as such, why do you object to it?

A. In the first place it is too soluble and forces an unbalanced nourishment on the plant, crowding out other essential elements. Secondly, the plant can take the nitrate, but uses very little of the soda because it is a minor element. Thus the soda piles up in the soil and hardens it.

Q. How do nitrogen-containing fertilizers like sodium nitrate and cyanamid affect the nitrogen-fixing soil bacteria?

A. About 78 per cent of the atmosphere is made up of gaseous nitrogen. Living soil contains enough nitrogen-fixing bacteria to fix enough atmospheric nitrogen to supply abundantly the needs of crop plants. In the presence of soluble nitrates, these bacteria use the nitrogen which man has provided in his artificial fertilizers and fix absolutely none from the atmosphere.

Q. Are artificial fertilizers responsible for poor aeration of the soil?

A. There are several ways by which artificial fertilizers will reduce aeration of soils. Earthworms, whose numerous burrowings make the soil more porous, are killed. The acid fertilizers will also destroy the cementing materials which bind rock particles together to form crumbs. Lastly, hardpans, result which seal off the lower soil levels, keeping them more or less completely anaerobic.

Q. Will the type of fertilizer used influence the amount of vitamins produced by the plants?

A. Several Experiment Stations have found that supplying citrus fruits with a large amount of highly soluble nitrogen will lower the vitamin C content of oranges. Other vitamins have been experimented with successfully as well.

Q. Would you regard susceptibility of plants to diseases and insects as hunger signs?

A. Yes, plants which are incomplete in minerals may appear normal externally, but their incompleteness is revealed by the ravages of fungi and insects. Such scavengers do not find organically raised foods to their liking. They will take a few bites of it and then settle down to strip the crops having an oversupply of carbohydrates caused by excessive fertilizing. It is for this reason that disease-producing fungi and insects are regarded as nature's censors. They separate the wheat from the chaff, the nutritious from the deficient.

Q. Is it possible that when artificial fertilizers are used, the crops are more susceptible to disease?

A. Chemical fertilizers rob plants of some natural immunity by killing off the policemen microorganisms in the soil. Many plant diseases have already been considerably checked when antibiotic-producing bacteria or fungi thrived around the roots.

When plants are supplied with much nitrogen and only a medium amount of phosphate, they will most easily contract mosiac infections also. Most resistance is obtained if there is a small supply of nitrogen and plenty of phosphate. Fungus and bacterial nitrogen fertilization, as well as to a lack of trace elements.

Q. Will artificial fertilizers produce the same amount of protein in crops as organic fertilizers?

A. It has been found that fertilizers that provide quickly soluble nitrogen will lower the capacity of hybrid corn, in particular, to produce seeds with high-protein content.

Q. Was there any connection between the epidemic of "internal breakdown" of cabbage (New York State in 1942) and the widespread use of artificial fertilizers?

A. Shafer and Sayre have since shown that "internal breakdown" of cabbage, causing discolored veins and dying of tissue was a direct result of "crop pushings." Much more of this disease was found when the

(*Continued on page 57*)

Liquid Manure Tips

By MYRON PARISH

IN THE spring when the snow has gone and Mother earth is donning her annual green dress to receive the myriads of beautiful spring, summer and fall flowers, my thoughts turn to one of the annual jobs that is a must for my garden—that of making liquid manure for the coming flowers.

There are several ways of making liquid manure, but the following method is easy, economical and not a bit messy.

I have three, sixty gallon steel drums, which have been buried back of my tool shed. As soon as the weather is warm enough to keep water from freezing I get three large one-hundred pound sugar sacks and fill each one with a mixture of fresh cow, horse and chicken manure in equal parts. These are then suspended in the drums, one to each drum, and then the drums are filled full of warm water. Be sure the sacks of manure are under water.

After you have made sure that the bags are under water, cover the drums and let the manure steep in the water for thirty to forty-five days. At the end of this time, remove the manure sacks and add enough water to the liquid manure so that it is about the color of weak tea. I find from making this liqiud manure so many times, that by filling the drum to within one inch of the top that the strength of the solution is just right for all general purposes in Michigan. Weather conditions for other parts of the country vary and flowers and shrubs come into bloom at different times of the year. The main purpose of the liquid manure however, is to give plants a boost just before they start to bloom, so the liquid manure can be made up at any time in order to be ready in time for the flowers and shrubs as they come into bloom.

Liquid manure should be applied to the ground around the particular plants which are to receive it; then washed in with water. One can save a lot of steps and labor if they can apply the manure just before a good rain, but by all means, see that it is washed into the soil where it will do the good for which it was intended.

I give my plants three applications a year in the proportion of one gallon to five square feet of plant bed. For shrub groups use the same proportions.

Garden the Natural Way
WITH NATURE'S
MINERALS AND MULCHES
GREEN-NUTRO
is a scientifically blended mixture of
Phosphate and Potash Rocks with all the Essential Trace Elements

Contains all soil nutrient elements except nitrogen for completely remineralizing soils of ORCHARDS, GARDENS, LAWNS, and FARMS. Use anytime at rate of 1 lb. for each 10 square feet.

Price*—Per 80-pound bag ..... $ 2.50
Per ton 31.00

FERTI-MULCHES

Finely shredded and composted organic matter REINFORCED with all ESSENTIAL MINERALS. Ferti-Mulch "A" for ACID PLANTS and Ferti-Mulch "B" for all others.

Price*—Per 100-pound bag ..... $ 2.50
Per ton 45.00

MULCH and grow HEALTH FOODS rich in minerals and VITAMINS. No digging or plowing, no cultivating, no hoeing, no drought damage. Simply plant and mulch. A method for the person having limited time for gardening, and wishing HEALTH FOODS.

* Shipped f.o.b. Sharpsburg, Md. Terms cash with order.

EASTERN STATES SOILBUILDERS, INC.,
Sharpsburg, Maryland
Telephones—Keedysville 4961; Williamsport 3104

THE
TRIPLE VALUE
MULCH MUL-Tex
• HOLDS MOISTURE
• SMOTHERS WEEDS
ELIMINATES NEED for CULTIVATION

Whether it RAINS or SHINES your garden will always benefit with MUL-Tex, the non-absorptive buckwheat hull mulch. Ideal on flower beds, gardens, roses, etc. Dark brown color gives rich background. 200 lbs. (covers 260 sq. ft. 1 in. deep) $5.00; 500 lbs. — $10.50; 1000 lbs. — $19.00; 1 ton — $35.00; F.O.B. Cohocton. Order from ad or send for FREE Descriptive folder.

LARROWE MILLS Inc.
Box 16 COHOCTON, New York

EXTERMINATE RATS AND MICE

RAUSMITT Rat and Mouse Killer. Reliable, effective, long-lasting with greater safety. Contains Warfarin (developed by the Wisconsin Alumni Research Foundation).

RAUSMITT Ready Mix: $1.25 per lb. 5 lbs. for $5.00.
RAUSMITT Concentrate: 4 ozs. makes 5 lbs. of ready mix. $2.50 for 4 ozs.

Shipments postpaid. No C.O.D. Money back guarantee. Agents wanted. Mail orders to **TORRESDALE PRODUCTS**, Andalusia, Pa.

I AM very proud to reprint an item which will appear in the next issue of the *Health and the Soil,* of the Albert Howard Foundation of Organic Husbandry of England.

"A brief communication from the Netherlands Minister of Agriculture of 14 Nov. 1950 to members of the First Chamber, states that of the 342 million guilders of Marshall Aid, 10 million guilders will be devoted to a number of important schemes for making compost out of town refuse. In addition, the Minister intends to start three experimental farms in the North East Polder (part of the reclaimed area of the Zuiderzee), all three comparable, but with different systems of manuring, namely, without stock, without artificial fertilisers, and partly with stock and also fertilisers. (Presumably the second farm is to be run on organic husbandry principles.)

"Further study is to be given to comparing the effect of organic manures with artificial fertilisers on four other farms in North Friesland, East-Overysel, North-Beveland, and North-Limburg.

"We may rejoice that the experiment for which Sir Albert Howard so often asked in vain is to be started under the auspices of a European country, and one so well equipped to deal with all the technical aspects of the trials."

"(Communication from the Albert Howard Foundation of Organic Husbandry, by courtesy of the Nederlandse Vereniging voor Bodemgezondheit.)"

It is interesting to note that Governments are becoming concerned over the possible harmful effect of chemical fertilizers and it is only natural to see that it is a European country that is taking the lead, for Europe is way ahead of the United States in health legislation. With so much money going abroad in Marshall Aid, would it not be advisable that our Government set aside a few million to "get at the bottom of this question?"

Sir Albert Howard's Experience on Foot and Mouth Disease Confirmed from the Netherlands

Here is another item from the same publication (mentioned above) which should make organiculturists happy:

"The second (winter) number of *Bodem,* the new Journal of the Nederlandse Vereniging voor Bodemgezondheit, includes an article by Mr. J. Meinsma, a farmer, which confirms very briefly, but in a striking way, the often quoted experience of Sir Albert Howard about the resistance of his compost-fed cattle to foot and mouth disease in India. The holding, which was a small one, not greatly exceeding 20 acres, was originally bought in the 'thirties and had been reclaimed from flooded waste land, with an overlay of sheer clay. A heavy dressing of sand was given and the fields shaped to slope downwards from the centre so as to drain well; (incidentally, this also repeats what Sir Albert Howard invariably did with his fields in India.) One half the area was sown to grass and clover, the other half to rye and oats, this half having been dressed with a small amount of chemical fertilisers. Both crops were excellent." The writer then proceeds:

"From the days of my childhood in Friesland I remembered that between 1890 and 1910 compost was often used on newly reclaimed soil. Instinctively I copied this. First I gave a dressing to the whole farm, then each year to a different area. This method of manuring provided me with some notable experiences. Even at a time of the most serious epidemics when my neighbors' cows were so infected that they nearly died, my own cows did not get foot and mouth disease. I attribute this to my heavy organic manuring, 60 tons to the acre. The compost was procured from Lemmer, Meppel, and from the Society for the Transport of Waste."

"(Communication from the Albert Howard Foundation of Organic Husbandry, by courtesy of the Nederlandse Vereniging voor Bodemgezondheit.)"

Soil Organisms

I would like to quote an item from the March, 1951, *Today's Health,* (formerly *Hygeia*):

"Disease organisms are constantly falling on the soil. Yet, strangely enough, the soil is often relatively free of disease.

"Why? What happens to disease organisms when they fall on the soil?

"Rene J. Dubos, a scientist of the Rockefeller Institute for Medical Research, uncovered some of the facts. Other scientists pooled their findings. And soon man had the amazing answer.

"Today we know why the soil isn't always a cesspool of disease. The reason is that it is often the site of a battle, fought by teeming hordes of microorganisms.

"Millions upon millions of them are engaged in a war for living space, but that space is often limited. For that reason, potential colonies are doomed to die out.

"You might think that this struggle would be easily resolved—that those microorganisms that multiply fastest would simply squash their neighbors right out of existence.

"But that isn't the whole story. Some of them, who might otherwise be destroyed in this weird battle, use a type of chemical warfare to fight back.

"They produce a chemical, often a potent chemical, one that knocks the smithereens out of neighboring microorganisms by killing or weakening them so they become easy prey for other forces in the soil."

The ones that do this are the antibiotic organisms, the penicillins, as well as the organisms that give us streptomycin, terramycin, aureomycin, chloromycetin, and others. But it is a known fact that they are much more numerous in soils full of humus where little or no chemical fertilizers have been used. When a new discovery of an antibiotic is announced, it is sometimes stated that the scientists found the organism in a farmer's field in a primitive country like Venezuela, where chemical fertilizers are rarely used. Where chemical fertilizers *are* used, all kinds of soil organisms are destroyed, including the antibiotic, which is the reason why disease appears in such situations and the spray gun has to be resorted to. The organic gardener, by piling in the humus and avoiding the too soluble chemicals, is increasing his population of antibiotic organisms and creating conditions which keep disease to a minimum.

You will save labor costs with a

KEMP

POWER SOIL AND COMPOST SHREDDER

Adaptable to power-take-off

Adjustable for soil texture

Labor is costly and getting scarce. A KEMP Power Soil and Compost Shredder saves up to 90% of hand time and labor in mixing any type of soil and fertilizer.

The more thoroughly mixed and aerated results produce a greater yield. Growing better stock, plus the savings on labor quickly pays for your KEMP.

2 to 20 cu. yds. per hour capacity — priced from $110. You'll find the KEMP that suits your needs. Write today.

KEMP MANUFACTURING CO.

Dept. 4 1027 E. 20th St. Erie, Pa.

ROTOTILLER OWNERS

With the **AUTOMATIC DRIVES** Installed on your rototiller: the operator is able to turn the machine VERY easy with ONE hand at either end of the row, as the DRIVES 'free' one wheel or the other when turn is started and lock the 'free' wheel into FORWARD driving position when turn is completed and BOTH wheels drive forward until another turn is started. The "Hard-to-stop" B1-6 and B1-7A models can be stopped 'On-the-spot' when the rototiller is equipped with AUTOMATIC DRIVES. Rototillers with reverse gear units turn under their engine power, all the operator has to do is to operate the FORWARD and REVERSE speed lever and follow the handlebars around. Oil leaks from sides of the transmission case can be stopped with our special oil seals if installed with the DRIVES. For literature or demonstration see your local rototiller dealer or write to

AUTOMATIC DRIVE CO.

P. O. Box 555 Saginaw, Mich.

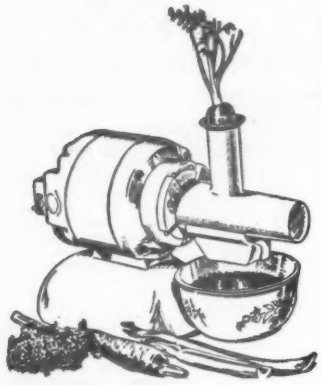
DEALERSHIPS open in good territory.

Kill Moles WITH A **NASH TRAP**

Used by leading mole control specialists. The safe, sure way. Can't poison soil. Saves your earthworms. Works in any type of soil. Single traps, at dealers or direct, $2.65 postpaid. FREE—Mole control pamphlet. Nash Mole Traps, R. R. No. 1, Scotts, Michigan.

NASH Choker Loop TRAPS

THE NEW MARVEL JUICER



"The Only Juicer Made of Nylon"

No other juicer on the market today will do so many kitchen jobs well. The Marvel Juicer extracts juice and discards dry pulp in one operation. It makes juice from all vegetables without adding water. It will grind all nuts making cream or butter and cut vegetables for soup or salads. It is ideal for making baby food of all kinds as well as grating cheese and bread crumbs.

The Marvel Juicer is made of Nylon (a substance as hard as steel) and stainless steel. No aluminum or any corrosive metal touches the juice.

The Marvel Juicer is equipped with a one-third h.p. motor which will last a life-time with proper care.

The Marvel Juicer Company

1229 South Central Avenue Lodi, Calif.

WILLOW GROVE EARTHWORM HATCHERY

turns to ACTUMUS

Experimental tests conducted here in our Organic gardens prove Actumus has every virtue claimed for it. An Organic Compound, it instigates the formation of other organic compounds in the soil, of which one substance predominates:—a natural forming ROOT HORMONE called HEXONE. The HEXONE causes the formation of a most remarkably extensive and healthy root growth. Also forming at the same time is an EARTHWORM HORMONE called 1-TYROSINE which encourages the activity of native earthworms. Both these hormones aid in the formation of nitrate bacteria in the soil. A little ACTUMUS goes a long way. May be used when seeding, transplanting or directly to growing plants. Remember plant growth depends primarily on a well developed root system. Order now, and watch your flowers and vegetables grow! Full directions with each order.

1 lb. $1.25—1 lb. $4.25—5 lbs. $17.50

Willow Grove Earthworm Hatchery

SUMNEYTOWN PIKE KULPSVILLE, PA.

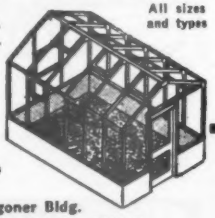
TEXAS GREENHOUSE CO.

offers you the

Ezyrected **GREENHOUSE**

. . . with new, outstanding features.

All sizes and types



Send for Catalog

Greenhouse Accessories

814 Dan Waggoner Bldg.
FORT WORTH, TEXAS

New Blood Test

In a recent issue of the *Southern Medical Journal,* Dr. David I. Macht of Johns Hopkins described experiments in which blood and spinal fluid from the mentally ill when applied to the soil where seedlings of a certain kind of lima bean was growing, stunted their growth. Only blood from real psychotics depressed the growth of the plants and the worse the condition of the patient, the more the plant was stunted. *The Pathfinder* of March 7, 1951, in discussing this work, says:

"Blood from more than 1,200 mental hospital patients was tested by Dr. Macht in his studies. He added 1 per cent solutions of the blood to test tubes in which *lupinus albus* seedlings grew in liquid plant food. This European cousin of the lima bean has a single root that can easily be accurately measured. Under strictly controlled conditions, growth is compared with that of untreated specimens."

Dr. Macht feels that this method may become valuable in performing medical tests of various kinds on people. By observing the effect on growing plants certain conditions of disease may be diagnosed. Dr. Macht, however, should not overlook the lesson that is indicated by his discovery. When plants are fed, the quality of the food they get is a factor in producing health in them. Using blood from a sick person in the plant's diet caused it to become stunted.

I am reminded of a series of experiments performed on cats by Francis M. Pottenger, Jr., M.D. of Monrovia, California, which is along the same line of thinking. His experiments were conducted to see the effect of cooked versus raw meat and milk on cats. He found that those that were fed raw meat and unpasteurized milk were much healthier. He then went a step further. I will quote from his article in the August, 1946, issue of the *American Journal of Orthodontics and Oral Surgery*:

"After we performed these experiments, the pens in which all of these animals were housed lay fallow for several months. Weeds sprang up in each pen. The fact that the weeds grew so luxuriantly in the pen which housed the raw-meat and raw-milk-fed animals, as compared with those which grew in the other pens, led us to perform a further experiment. We planted two kinds of beans in each pen. The results of the soil-fertilizing effect of the milk-fed female cats is shown in Fig. 21, where A, B, C, and D indicate the relative growths of vegetation in pens formerly

occupied by cats on the various milk diets."

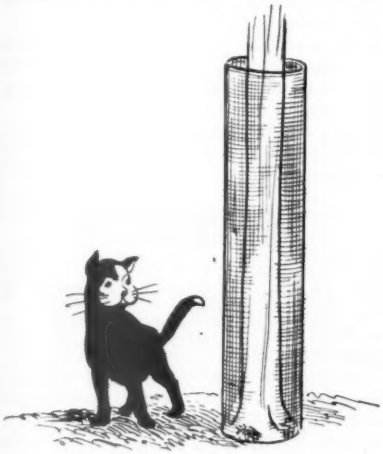
The experiments show without any question that the manure from the cats fed on cooked food had the effect of causing disease in the plants, because those cats were not healthy. It brings up the question which has been covered in the literature of organiculture. Is manure from healthy animals fed organically better for the land than manure from animals fed with crops raised with chemicals. The answer is, *Yes*. There is experimental evidence to that effect.

J. I. Rodale

Garden Gadget

A Tree Trunk Guard

A shapely young elm at the lower end of the garden has been the family cat's pet toe nail sharpener. The tree is about six inches in diameter and the cat scratched on it all



last season, so consistently that there was a ring around the trunk as smooth as if it had been sanded.

I did not care to paint the trunk with tar. It is messy, unsightly and it seals the pores in that spot.

As a substitute I put a cuff of wire around it. I used a piece of discarded screen door wire tying it with tape. It is about two inches larger than the tree leaving ample room for growth and also the air circulation is not impeded.

It is not noticeable and it is 100 per-cent effective so far as our cat, Winston is concerned. It also has the further advantage of being uninviting to passing canines.

H. E. Colby,
1155 Bertch, Waterloo, Iowa

5-HP Gravely Tractor powers 20 tools—does every lawn, garden, field job *easier, better!* All-gear drive, Reverse. "Power vs Drudgery" Booklet FREE. Write for it today!

GRAVELY MOTOR PLOW & CULTIVATOR CO.
BOX 648 DUNBAR, W. VA.

FIELD-TESTED FOR 30 YEARS

KATAHDIN POTATOES, high quality, organically grown. Delicious prepared for table in any method you prefer $5.00 bushel, express collect. NORMAN H. STARK, R. R. No. 1, Thiensville, Wis.

Hulled Proso Millet

The Antacid Cereal

Delicious and healthful. Grown without Chemicals.

5 lb. sack — $1.50 postpaid

Send for our Catalog of extra early and hardy seeds.

OSCAR H. WILL & CO. **Box 1, Bismarck North Dakota**

LEWISIA REDIVIVA

Flowers like exquisite pink water-lilies. Hardy, easy low perennial. Plant dormant tubers now. 10 for $1.00; 60 for $5.00. Illustrated 68-page Catalog ready.

REX. D. PEARCE
Dept. D, Moorestown, N. J.

GROW MINIATURE TREES
FOR PROFIT & PLEASURE

Fabulous Money-Real Fun'Grow *genuine live* dwarf (Ming) trees. A terrific new business and hobby. Astounding details Free. Write —

DWARF TREES, Dept. 9
P. O. Box 355 • Briggs Station
Los Angeles 48, California

ST. AUGUSTINE GRASS

Makes the world's most beautiful lawn, a padded heavy carpet, green year round. Thrives in dense shade as well as sun. It pushes all other grass and weeds out. Requires little mowing. You stick the twigs among other grass and weeds and it spreads fast. It will survive freezing weather. Now is time to plant. 1 Bu. plants about 400 Sq. feet, twigs 8 inches apart. $3 per Bu. Order now.

National Nurseries, Dept. 22, Biloxi, Miss.

Special 10% DISCOUNT

when you buy two or more of these authoritative, fascinating volumes

Pay Dirt *by J. I. Rodale.* This is still the Bible of the organic method, containing the specific information necessary to be a good organiculturist, 252 pp. **$3.00**

The Healthy Hunzas *by J. I. Rodale.* These people are astoundingly healthy because of the way they raise their food. Full details for applying the Hunza methods. 263 pp., illust. **$3.00**

Stone Mulching in the Garden *by J. I. Rodale.* A new invention in gardening! An authoritative guide to the use of stones and rocks for obtaining greater yields and healthier plants. Illustrated, 164 pp. **$3.00**

Farmers of 40 Centuries *by F. H. King.* Shows dozens of ways used by the Chinese to make compost. Over 200 photos giving valuable ideas for gardening and farming. 384 pp. **$3.50**

Humus & the Farmer *by Friend Sykes.* Biography of a 1000-acre English farm where the organic method has proven its superiority over farming with chemicals. Illust. 416 pp. **$4.50**

Postage prepaid when cash accompanies order

Organic Gardening

Dept. G-6 Emmaus, Pa.

JUNE

By WILLIAM H. EYSTER, Ph.D.

IN ALL REGIONS

- Make succession plantings of gladiolus for continuous blooms.
- When the leaves of crocus, daffodil and other spring-flowering bulbous plants have turned yellow, the underground bulbs are mature and the part of the plant above ground may be removed.
- Don't rake clippings from the lawn, unless the grass has been allowed to grow too long before cutting.
- Do not allow perennials to go to seed if you want them to bloom again in the fall from new stems formed after the spring-blooming stems are cut off.
- Keep the garden mulched to control weeds, conserve moisture, and feed the soil organisms.

THE NORTH

- In cutting flowers of peony and rose, be sure to allow enough leaves to remain on the plant to nourish it.
- Pinch out the growing tips of hardy chrysanthemums.
- Sow sweet alyssum every few weeks to keep a fresh-looking carpet of white or violet in the garden all summer.
- Dahlias planted now will bloom at the approach of cool weather.
- Pinch out the terminal buds from the delphinium spikes to cause the development of many smaller, lateral spikes of suitable length for cutting.
- Mulch delphiniums, mulch roses, mulch everything.
- Move house plants out to summer quarters.
- Sow seeds of such biennial plants as sweet William, Canterbury bells, foxglove, and forget-me-not.
- Sow seeds of annuals for late season blooms.
- Spring-blooming perennials such as arabis, alyssum, primrose, iris may be divided and replanted at this time.
- June is the month to start both the hardy and tender waterlilies.
- Seed the empty spaces in the rock garden

with portulaca which are heat-loving plants with brightly colored flowers.

• Creeping verbenas should be given some support to keep them off the ground and free from soil stains and musting in wet weather.

• Remove poorest stalks of hollyhocks to improve growth and to increase flowers of the remaining, stronger stalks.

• Continue succession plantings of early crops—Towards the end of the month, plant cabbage, broccoli, and winter squash.

• Do not weaken asparagus by prolonging the cutting season.

• Do not walk among garden plants while they are wet in early morning. To do so may spread disease.

• Sow seeds of endive, beets, carrots, kale, and beans for fall crop.

THE NORTHWEST

• Keep all faded flowers cut off to prolong the flowering period.

• Cut delphiniums back to ground level for new stalks which will bloom in late summer or early fall.

• Plant dahlias and chrysanthemums. Take up, divide, and replant iris.

• Sow seeds of heat-loving annuals; sow seeds of perennials.

• Prune spring-flowering shrubs immediately after end of blooming period.

• Thin such fruits as peaches and apples.

THE SOUTHWEST

• June is the transitional month in Southern California.

• Plant flower varieties which are heat resistant. Do not overlook pentstemon, salvias, marguerites, arctotis, aster Frikarte, and carnations.

• For edgings or borders, sow seeds of *Tagetes signata pumila*, sanvitalia, angallis, and *Zinnia linearis*.

• Dig spring-flowering bulbs towards the end of the month.

• Plant such evergreen bulbous plants as agapanthus, amocrinum, clivia, and crinum.

• Daylilies are one of the best of the perennials, and they require almost no care.

• Make quick compost by shredding and using Maye E. Bruce's herbal either with or without manure.

• Make root cuttings from half-ripened wood-abelias, azaleas, camellias, cistus, escallonias, daphne, and Chinese holly.

• New plants of lilacs, philadelphus, spiraea, and weigela can be grown from half-ripened wood.

• For rooting cuttings, use a mixture of equal parts of peat and vermiculite.

• Annual blooming climbing roses should be pruned after blooming, but hybrid teas should neither be pruned nor rested.

• Mulch everything, and do not use commercial fertilizers.

• Continue planting warm-weather crops, and yams and sweet potatoes should be rushed into the ground.

• Set out strong plants of tomato, egg plant and pepper for late crop.

• Tampala is one of the best hot-weather greens.

• Be sure to plant summer varieties of lettuce—Great Lakes, Slobolt, Oak leaf and Bibb.

THE SOUTH

• For asexually propagating gardenia, cut slips from the lower sections, a foot or so in length, and root in good garden soil with about half the slip underground.

• Plant seeds of gaillardia, globe amaranth, helianthus, morning glory, petunia, portulaca, salvia, tithonia, verbena, periwinkle, and zinnia.

• Figs suitable for Florida are Celeste, Green, Brown Turkey, Ischia, and Brunswick.

• Mulch figs, but mulch all other kinds of plants also.

• Plant collard, mustard, eggplant, pepper, okra, rutabaga, spinach, and turnip.

• Dare to plant papayas.

GARDEN CALENDAR

JULY

IN ALL REGIONS

• Completely mulch your garden before going on vacation so that it will not be overtaken by weeds and drought while you are away.

• Regard the condition of your garden in July as an index of your garden success.

• Make plans for your fall garden.

THE NORTH

• Continue pinching off the lateral shoots of chrysanthemums and dahlias if you want fewer but larger flower heads.

• Delphinium, phlox, bachelor's button, violets, nepeta, and forget-me-nots should be cut back heavily to induce new growth for fall flowering.

$ $ $ $ $ $ $

GET RICH
$ FERTILIZER $
QUICKLY

YES - RICH FERTILIZER and TOP YIELDS

B.C.A. means that you can have rich compost from waste materials in as little as three to five weeks. It is a mixed, concentrated composite containing a multitude of soil bacteria developed specifically for the rapid breakdown of mixed organic wastes.

HERE IS WHAT IT DOES:

• converts waste into fertilizer • helps regulate moisture and aeration in the soil • increases enzyme action • encourages earthworms • reduces odors in outdoor toilets • stimulates weak soils • builds valuable humus • remineralizes your soil • increases fruit and vegetable production

HERE IS WHAT IT CONTAINS:

• hormones • phosphate rock • bacteria • minerals • trace elements • vitamins • peat base (all blended to give you the BEST activator)

HERE IS WHAT YOU CAN USE:

B.C.A. and any of the following wastes will give you a rich compost: leaves, grass cuttings, manure, garbage, plant residues, green matter, rotten fruit fish wastes, corn cobs, corn husks, chaff straw, packing house and cannery wastes, and almost any other organic waste!

FREE LITERATURE

ORGANIC GARDENING, Dept. G-6
235 Halsey St., Newark, N. J.

Enclosed find check or money order: please send the units of B. C. A. I've checked below:

☐ 1 unit ($1.00 Prepaid; $1.20 W. of Miss.)

☐ 2 units ($2.00 Prepaid: $2.40 W. of Miss.)

☐ 6 units ($4.50 Prepaid; $5.00 W. of Miss.)

☐ 25 units ($12.50 Prepaid; $13.50 W. of Miss.)

☐ Free information on dealership. Each unit is enough for 3 to 1 ton of compost.

Name .....

Address .....

City .....

Name of Nearest Dealer .....

• Hollyhocks and veronicas can be induced to bloom a second time by carefully removing old flowers to prevent them from going to seed.

• Baby rambler roses can be kept in bloom all summer by keeping old flowers cut off.

• Pinch back boltonia and hardy asters to produce bushy plants.

• Brighten up your flower borders by interplanting with coleus, pelargonium, and begonia.

• Make your last succession plantings of gladiolus for fall flowers.

• There is still time to plant such annuals as lupine, balsam, portulaca, Shirley poppy, torenia, mignonette, and Virginia stocks.

• Sow seeds of columbine, Canterbury bell, and foxglove.

• Order your bulbs for fall planting.

• Renew old lily-of-the-valley beds. Pips may be planted in the same place after the soil has been renewed with acid compost and rock minerals.

• Plant vegetables for fall use and winter storage. Beets, broccoli, Brussels sprouts, bush beans, cabbage, carrots, Chinese cabbage, celeriac, endive, kale, peas, rutabagas, turnips, winter radishes and lettuce.

• Pinch off the tips of new growth on Yews and other coniferous evergreens to induce a more compact growth.

THE NORTHWEST

• This is seed sowing time for violets and pansies, calendula, centaurea, clarkia, cynoglossum, dimorphotheca, scarlet flax, godetia, larkspur, Iceland poppy, linaria, nemesia, schizanthus, snapdragon, winter stocks, and winter sweet pea.

• Leucophyllum planted with silvery blue-flowered moraea make the July garden more colorful.

• Continue disbudding chrysanthemums and dahlias for large heads.

• Cut black lupines which will then make new growth and bloom again in the fall.

• Plant pansy beds with verbena, dwarf petunia, or annual phlox.

• Rhododendrons, azaleas, and other acid-loving shrubs should be mulched with a leafmold mulch or shredded leaves but never cultivated.

• Plant vegetables for fall use and winter storage.

THE SOUTHWEST

• Conserve water by mulching everything.

• Sow seeds of heat-loving annuals where they are to grow and flower, including

cosmos, annual gaillardia, French and African marigolds, tithonia, and zinnia.

• Transplant into the garden chrysanthemum, dwarf Unwin dahlia, blue marguerite, pentstemon, perennial gaillardia, and petunia.

• Plant shady locations with begonia, Japanese anemone, browallia, and nicotiana.

• Be sure to plant such evergreen bulbous plants as agapanthus, the stately albucas, the beautiful shell-pink *Amacrinum Howardii,* the aristocratic clivias, the tropical and semi-tropical crinums, the blue-berried dianellas, the ever-blooming dietes, the well-known kniphofias, and the hardy evergreen day-lilies.

• Bearded iris may be transplanted now.

• Sow seeds of such winter-flowering annuals as tetra-snapdragons, stocks, calendulas, pansies, and violets.

• Transplant ornamental trees and shrubs but use plenty of water and mulches.

• Use fruiting shrubs for hedges instead of the useless soil-robbing privets: Meyer lemon. lemon guana, pineapple guana, and pomegranate.

• Get acquainted with clamondin *(Citrus mitis).*

• Protect the trunks of fruit trees from sunburn—use whitewash or any of the tree protectors.

• Prune the berries as soon as they are through fruiting.

• Set out well-grown plants of tomato, eggplant, and pepper.

• Continue planting summer squash, string, pole, and soy beans, cucumbers, sweet corn, melons and such cool-weather plants which can endure the summer heat as chard, carrots, beets, and kohlrabi.

• Tampala is a heat-resistant greens.

• Plant vegetables for fall use and winter storage.

THE SOUTH

• Plant gaillardia, globe-amaranth, ornamental sunflower, portulaca, verbena, periwinkle, zinnia.

• Mulch roses—mulch everything.

• July is a month for harvesting in Florida, but you can plant celery, collard, eggplant, mustard, okra, pepper, New Zealand spinach, turnip.

• Give special attenion to making a large supply of compost.

• Partially decomposed raw matter can be finished by placing it in row trenches 6 to 8 inches deep to be planted when the compost is finished. These trenches may be inoculated with earthworms.

• Cover small seeds with a mixture of equal parts of good soil and compost.

BOOK REVIEWS

MAKING TERRACE AND OUTDOOR FURNISHINGS by Robert Scharff, (The McBride & Company, 116 East 16th Street, New York 3, New York. 1951 $1.50). This small, profusely illustrated book answers all the questions the home owner is apt to ask on making porch, terrace, lawn and garden furnishings. The author tells you what woods to use, what colors are best, and what designs are most suitable. Included are also complete plans for outdoor stoves and picnic furniture. The children have not been forgotten for there are designs for sandboxes, seesaws, swings, wading pools and the like. Cloth bound, 96 pages.

GERANIUMS—PELARGONIUMS by Helen Van Pelt Wilson (M. Barrows and Company, Inc., 114 East 32nd St., New York 16, New York. 1950 $3.50) The lover of this old-fashioned plant will be delighted with Mrs. Wilson's treatment in this book. It is surprising to learn of all the uses the geranium can fulfill in the home and garden. You will be delighted with the simple, practical approach and the author's complete understanding of the geranium in all its forms and uses. Cloth bound, 248 pages. Well illustrated with line drawings, half tones, and colored plates.

TUBEROUS BEGONIA, A Complete Guide for Amateur and Specialist, by Worth Brown and illustrated by Eldon N. Dye. (M. Barrows & Company, 114 East 32nd Street, New York 16, N. Y. 1950 $2.75) The tuberous begonia, regarded by some gardeners as the most beautiful flower in the world, is presented in 11 chapters of interesting reading and 67 illustrations. Some of the illustrations emphasize the amazing beauty of the different varieties and species, while others show how to proceed with the planting and the growth from seed or tuber to the properly staked plant filled with bloom. Cloth bound, 128 pages.

For every gardener and farmer who reads the Scriptures, here is a reverent and inspiring book

Farming & Gardening in the Bible

By Alastair I. MacKay

In hundreds of beautifully retold anecdotes and quoted passages from the Scriptures, Commander MacKay presents the agricultural background of the ancient peoples of the Middle East, their horticulture, their cattle, their orchards, their vineyards. Fascinatingly recreates the rural background of ancient Hebrew life. 280 pp. $3.00

Postage prepaid when cash accompanies order.

ORGANIC GARDENING, Box G6, Emmaus, Pa.

THE A B C of the GREENHOUSE

by W. E. SHEWELL-COOPER (NATED FOR CULTURAL WRITES ACTIVITY & EDUCATION)

This Handy Quick REFERENCE Book contains 320 pages including 12 pages of plates — data on nearly 300 plants • Crammed full of information on greenhouse management—including chapters on composts & potting as well as on propagation. SEND FOR YOURS TODAY—LIMITED SUPPLY

$1.50 POSTPAID

THE HORTICULTURAL BOOK SERVICE

BOOKSELLERS & IMPORTERS • UNUSUAL NEW & OLD GARDEN BOOKS

518 DETROIT AVE. • CONCORD, CALIFORNIA

ACTUMUS

IS THE ANSWER TO A GARDENER'S PRAYER

Put a pinch or spoonful dry ACTUMUS in planting holes and along trenches when setting out plants or seeds for flowers and vegetables, also under gladiolus bulbs, dahlia tubers, etc. Water everything, including lawns and trees, regularly with solutions of ACTUMUS. Nothing else needed. 100% organic. Odorless. Cannot burn. ¼-lb $1.25, ½-lb $2.25, 1-lb $4.25 postpaid. (1-lb makes up to 1500 gallons.) AT YOUR STORE OR FROM ORGANIC SUPPLIES P.O.B. 820, PITTSFIELD, MASS.: PETER HENDERSON & CO., 35 CORTLANDT ST., NEW YORK; write for full informa- CORTLANDT ST., NEW YORK; BURKLEIGH CO., DEPT. 467, TOWSON 4, MD.: LUCKIE ORGANIC GARDEN, SUMNEYTOWN PIKE, KULPSVILLE, PA. Write for full information and full directions to:

Foreign Products Corporation

1270 Broadway, New York

or send for trial packet 25¢

Clean Chimneys Permanently

Stops down draft—prevents furnace explosions. Satisfaction guaranteed. This copper pot, (with character). Mailable. For free booklet address

WIG., ABINGTON, MASS.

SAVES FUEL

RESEARCH IN THE ORGANIC METHOD

By RUTH RODALE

Treat Lawns with Care, Not M-H

If you want to keep your lawn alive and green, don't be misled by current advertisements of a chemical named Maleic Hydrazide. Sprinkle it on grass, claim high-pressure salesmen, and the lawn mower becomes obsolete. Grass simply stops growing.

Yes, says Consumer Reports, but it is pretty horrible-looking after being sprayed. The turf is brittle, with little resistance to wear, while turning the color of dead crab grass. Maleic hydrazide spraying also seems to be followed by a sudden upsurge in crab grass content. The Bureau of Plant Industry at Beltsville, Maryland, a branch of the Department of Agriculture, carried out this experiment, which Consumer Reports mentioned in their February 1951 issue.

Lawns Can Be Ruined

Scott & Sons Grass Seed Company is no more enthusiastic about the growth regulating chemical. In their bulletin, *Lawn Care* (113) we read: "Let no lawn mower manufacturer jump out of the office window in despair. The magic of chemistry isn't that good yet." Recent tests don't place maleic hydrazide in the same rosy glow as the first optimistic reports. "A rate of spray that stopped growth (of grass), did it by the death method. In repeated tests it invariably discolored and injured the grass to the extent that it would displease any home owner."

"Common sense would seem to classify this as an act against Nature. Stop growth and you stop life. When Newfoundland dogs can be held down to Pekinese size and you can throw away your razor because whiskers stop growing, maybe lawns can be so treated that the mower can be put into moth balls. For the present the advice is keep it in a good state of repair.

"A further claim for M-H is that crabgrass is killed 'by doses which do not seem to affect the good permanent grasses like Bluegrass, Fescue and Bent.' Perhaps so under certain conditions but in a series of tests by Scotts Lawn Research all three of these varieties were killed at rates much lower than needed for crabgrass. In fact applications below the critical range for Bluegrass actually seemed to give crabgrass a new lease on life."

GARDEN HINTS

Godetias, the Satin Flower

For those who want flowers for cutting as well as for garden decoration, but have little time to spare for them, Godetias, or Satin Flower, as they were called in grandmother's day, are tops. They furnish a wealth of bloom in six to eight weeks from planting, and although the satiny flowers look delicate, they last wonderfully, either as cut flowers or in the garden. They can be planted as late as mid-June, and still give months of bloom, for they do not mind moderate frosts,—it takes a real freeze to kill them.

They are a member of the Evening Primrose family; the flowers are mostly shades of pink, from pale to almost carmine, though some English seedsmen offer it in salmon and orange shades. It also comes in pure white, and can be had in both single and double varieties.

It is not particular as to soil, though a light rather sandy soil seems to suit it best; however it does well on any good garden soil. It prefers a sunny location and a reasonable amount of water; plenty of humus in the soil and a light mulch will give flowers three to five inches across.

Not the least of their virtues is that the plants stand stiffly erect and never need staking; wind and rain do not ruin their beauty. All told, it is a most worthy annual, and should be more widely known.

Stake Tomatoes for Vitamin C

Latest experiments in gardening show that tomatoes from staked vines are consistently higher in Vitamin C than those allowed to sprawl. It is true especially in northern states like Maine and Wisconsin. The reason is because staked tomatoes get more sunshine than those on unstaked vines.

Partnership

A neat trick is "partnership" cropping late corn supporting pole beans. The beans should be planted at least six to eight inches from the corn plants to reduce root competition somewhat. The corn plant provides an excellent support for the pole beans.

MARTIN'S GRANITE DUST
A Natural Ground Rock

This native potash rock supplies 16 trace elements plus a sufficient amount of potash for abundant plant growth. You'll be amazed at the results when you remineralize your soil with Martin's granite dust. The slow release of nutrients makes a single application last for years—yet it insures a sufficient supply of natural minerals for your crops. Apply at the rate of ½ to 1½ tons per acre.

Write for information and Booklet on this soil remineralizer. Formerly sold through BALLY SPECIALTY PRODUCTS, Bally, Pa., NOW sold and shipped direct from our QUARRY, Office and Plant at

KEYSTONE GRANITE QUARRY, Ziensville 1, Pa.

IRIS

Plant Tall Bearded Oregon Grown Stock
SPRING SPECIAL
$4.50 catalog value, 3 for $3

CARLSBAD CAVERNS — Yellow & white
LADY MOHR — Oyster white & Chartreuse
MINNIE COLQUITT — White with purple plicata

Write for catalog illustrated in color describing the finest varieties available.

NATIONAL IRIS GARDENS
Beaverton, Oregon

List your organic foods FREE in the

Organic FOOD DIRECTORY

If you have organically grown foods for sale, you are invited to list them without charge in the ORGANIC FOOD DIRECTORY over your name and address. Describe in detail what you have that is organically grown, mentioning how long and in what manner you have applied the method. We will also register overnight accommodations serving organic food.

An up-to-date issue of the ORGANIC FOOD DIRECTORY is yours for 25c. It lists producers of organically grown foods in all parts of the U. S. Write today to

ORGANIC FOOD DIVISION
ORGANIC GARDENING, Box G6, Emmaus, Pa.

Wheat Thorn Organically Grown
Don't want to store long so place your order early.

$4.00 per bushel F.O.B. here.
NUT TREE NURSERIES
Downingtown, Penna.

Are Bees Safe?

(*Continued from page 27*)

stable, persisting as a poison for several weeks, or even months, after its application.

Poisons soluble in nectar, contact poisons, and fumigants generally affect the bees before they can return to their hives, but when in pollen the effect on the bees and brood continues for days and weeks. The greatest death rate of brood and hive bees occurs within the first few days. The poisoned pollen generally causes the death of the nurse bees that elaborate it into food. The queen is usually the last to succumb in a colony fatally injured by chemicals. The killing of the field force reduces the amount of poisoned pollen that is stored. Nevertheless, enough pollen may be gathered by the pollen collectors to destroy the colony.

In an apiary that is severely injured by arsenic the ground may be carpeted with dead and dying bees soon after the poison is secured. The affected bees fly for short distances, crawl up blades of grass or weeds, and hop away from the hive, often collecting in depressions or becoming hidden in the grass. In the chill of early mornings, small groups of stricken bees may be found huddled together. As the day becomes warmer, those still active crawl and hop away, frequently toward the sun. Such bees, when analyzed chemically, have been found to contain from half a part to several parts per million of arsenic trioxide.

TRADESCANTIA

By Julie Bedier

I WAS afraid to put tradescantias into my garden at first, for there is a wild tradescantia growing hereabouts that is one of the most horrendous weeds I know. But I finally succumbed and got a few plants from Wayside Gardens, and now every June I just stand and look at them and indulge in vain complacency.

Tradescantias start blooming in May, continue through June and keep putting out a few flowers throughout the summer. New blossoms come out every morning and wither before the day is done. Tradescantias are not bothered by bugs or diseases and are not particular about soil. They grow in sun or semi-shade. They stand the winter's cold heroically, coming up again each spring with cheerful regularity. They increase and multiply comfortably, so that you can divide and replant and soon have quantities if you wish, yet they do not send out fifth columnists in the shape of underground runners or try to take over your whole garden. If you want to cut them down in the late summer, to give more room to spreading asters and chrysanthemums, they do not mind at all. Best of all, tradescantias come in shades of blue and lavender, making cool, beautiful clumps in a garden which may be too hot with its reds, pinks and yellows. They are not at all like their wild poor relations, these tradescantias.

COLLOIDAL PHOSPHATE

THE KEYS
to
MORE PROFITABLE Farming and Gardening

COLLOIDAL PHOSPHATE has 10 major and 11 trace elements.
KAYLORITE (GLAUCONITIC MARL) has 18 major and 30 trace elements.

LET'S GO ORGANIC
With these two organically-recommended products—and

Hoover Soil Service
Gilman, Ill. Phone 70

PULVERIZED SHEEP MANURE

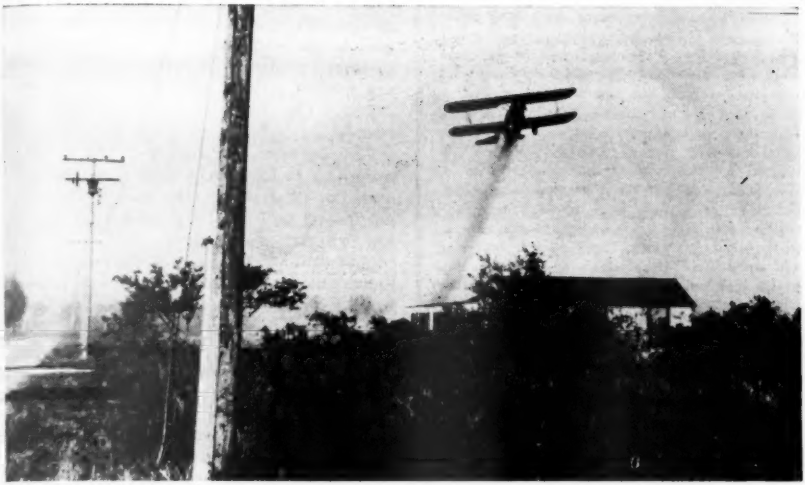
Year 'round organic fertilizer. Positively will not burn tenderest plants. From grain-fed animals; hence, high analysis, no weed seeds or straw. Flour fine—odorless—aged. Packed in sanitary 100 lb. bags. Directions enclosed. 100 lbs. $3.00; one ton $41.50; 15 ton car $585.00. All prices freight collect.

GULF-PRAIRIE COMPANY
P. O. Box 4082 Corpus Christi, Texas

FOR THE **JOY** of ORGANIC GARDENING

ActivO makes rich, activated compost-fertilizer quicker, better, easier, cheaper from waste . . leaves, garbage, etc.... (reduces garbage without odor!)... Activates, conditions and sweetens soils....Many other uses. Organic. Bacterial. Odorless. Trial size for 425-lb. compost. No. 71-1025, $1., 1400 lb. size, No. 71-1030, $2.

SEARS, ROEBUCK & COMPANY Catalogs; Stores



Witness the all too common practice of DDT spraying directly over homes and small gardens.

— *South Miami Pictures*

THE CASE AGAINST DDT

By RUTH RODALE

WHEN DDT was first put on the market after World War II, it was hailed as a miracle, destined to be the spray to end all sprays. With an apparently successful record of delousing in Europe, it was taken in wholeheartedly by the American people. Today many crops are sprayed with it; dairymen use it in their barns and near milking equipment; cows are often doused with it to eke out extra milk; closets and kitchens may be thoroughly saturated; picnickers have been known to set off DDT bombs and then pull out their sandwiches and pickles.

Why this supreme confidence in a chemical that is a menace to the health of all living things? Mainly because DDT seemed so sure-fire, so quick and so complete. But DDT has almost been replaced in insecticidal circles by more toxic organic (not to be confused with the organicultural meaning of organic) sprays. Parathion and chlordane are competing strongly with DDT for first rank as a bug killer. DDT has been partly discredited because certain insects have become resistant to what once was an average dose.

If orchardists and farmers could spray a large enough amount of DDT to kill off all harmful insects at one spraying, this problem would not come up. But heavy doses may cause severe injury to plant foliage or cattle. So users must content themselves with killing about nine out of every ten flies or other insects. The one living insect has then acquired the resistance to repeated applications of DDT. The resistance is passed on to its children, creating a family DDT-resistant. None but very concentrated amounts will be able to control them. DDT is then replaced by another "miracle" spray.

Spray Residues

The development of DDT-resistant insects is just one of the many reasons why this spray is objectionable. It happens to be the one which can be seen most quickly by those who use it. A second reason, that of spray residues on fruits and vegetables is of little interest to farmers since it does not interfere with the market value of the produce. DDT has no warning odor or taste and if used as a liquid spray is invisible on the

Those Physician readers of ORGANIC GARDENING who believe that the devastating forces of shock, trauma, spray-poisoned foods commonly sold, semi-starvation and widely scattered radiations of extreme penetrating power together with some radiation burns are certain to produce populations throughout the entire civilized world, whose health problems for decades to come will exhibit one or more of these influences will be interested in the following notice. These patients may repay an investment in special knowledge of the characteristic traits exhibited by patients suffering from unbalanced proportions of any element, various molecular combinations, and all other ordinary medications. For such is the special knowledge of this medical group.

Announcing

POST-GRADUATE SCHOOL

American Foundation for Homeopathy, Inc.

24th Session

June 18 to July 18, 1951

Senexet House, Putnam, Conn.

Write to:
Julia M. Green, M.D., Foundation Secretary
1726 Eye St., N.W., Washington 6, D. C.

10 Hemlock 4-5 ft. $15.

Tsuga Canadensis (Canadian Hemlock)

4 to 5 ft. 10 for $15.00, 25 for $35.00

100 for $120.00

BURBANK EVERGREEN CO.

ROUTE 1 ROAN MOUNTAIN, TENN.

2 oz. WARfarin to make 2½ lbs. bait
At Your Drug Counter, $1.00.
One-Spot Co., Jessup, Maryland.
Makers of One-Spot Flea Killer

THE WORLD'S FINEST ROSES

Write for illustrated catalog of OREGON GROWN ROSES . . . in full color.

N. VAN HEVELINGEN GROWERS
BOX 5076 g • PORTLAND 13, ORE.

sprayed surface. And only recently has the government cracked down by placing tolerance limits on amount of DDT allowed on produce for interstate commerce. 2½ parts per million on the surface of fruits is the ceiling. The responsibility of keeping the residue under 2½ parts per million, however is completely in the hands of the growers. According to local orchardists who send produce out of the state, the government does not inspect fruit for DDT residues as it does for lead and arsenic traces. Orchardists are supposed to feel the moral obligation to have their fruit analyzed regularly. If the residue is too high, they can either reduce the spray number or concentration or treat the fruit to take off some of the spray. The usual procedure is to brush off apples or to use hydrochloric acid.

Chemical treatment, though, is not completely accepted by the Experiment Stations. At the Michigan Experiment Station, Manalo and other scientists had trouble with spray residues (Food Packer 27, no. 13, p. 64, 1946). "Polishing, brushing or washing with detergents, hydrochloric acid, dilute acetone, acetic acid, or benzene emulsion were not effective in reducing the DDT concentration below the tolerance limit." The fruit had to be peeled to remove practically all of the DDT present on the skins of the apples tested. DDT will penetrate through the apple skins so that surface chemicals are practically powerless to remove it.

Plants Will Suffer Too

Unless crop yields are drastically lowered, no one thinks to question the effect of DDT on plants. Still, most farms and gardens that are sprayed regularly with it will begin to notice a drop in yields. Elberta peach trees, for example, are extremely sensitive to small amounts of DDT. When one-year-old trees are grown in nutrient solutions in contact with DDT mixed with quartz sand, they were stunted (Plant Disease Reporter, Vol. 32, No. 10, October 18, 1948, M. C. Goldsworthy). Notice that they were raised by a method equivalent to hydroponics.

More specifically, DDT can seriously change the root systems of plants. When DDT drips into the soil, roots lose the ability to form minute hairs, which are so important to draw on the soil's water supply during a drought. Even the fibrous roots which shoot out from the main roots do not appear. The plant then is sick: it grows poorly, and matures earlier (Plant Disease Reporter, Vol. 32, No. 4, 4/15/48). Certainly fruit from such plants couldn't measure up in vitamins and minerals to that of plants that haven't been touched with DDT.

Animal Injuries

What happens to an animal taking in DDT is a bit more serious. Reproduction is cut down, glands may be damaged, milk is contaminated, or animals may be killed outright.

Experiments with rats proved the extreme harm that can come from high amounts of DDT. Litters were fewer and smaller. Of those that were born, only a fraction of the young rats lived to adulthood (*Journal of Industrial and Engineering Chemistry*, April, 1948, by O. G. Fitzhugh). We ourselves may be eating DDT on half-a-dozen different kinds of food, and should do as much as we can to grow our own unsprayed vegetables.

Those scientists who have studied the effect of DDT on animals now know that most of it stays in the body. It is not normally excreted as a waste material. DDT piles up in the fatty tissues, regardless how much is taken in on foods. Then if severe sickness occurs, a strong concentration of DDT may circulate through the blood as the fat is used up. Females, incidentally, are more susceptible than males to DDT poisoning.

The Human Race Is No Exception

Liver trouble is often the outcome of a heavy diet of DDT. ("Liver Cell Alteration and DDT storage in the Fat of the Rat Induced by Dietary Levels of 1 to 50 parts per million DDT," Laug and others, *Journal of Pharmacology and Experimental Therapeutics*, Vol. 98, No. 3, March, 1950). They concluded their report with the following remark: "The finding of hepatic cell alteration at dietary levels as low as 5 parts per million of DDT and the considerable storage of the chemical at levels that might well occur in some human diets make it extremely likely that the potential hazard of DDT has been underestimated."

The problem with birds is more complicated. If the area is treated with enough DDT to kill off most of the insect population, young nestlings will first be fed with poisoned insects and then be half-starved through lack of food. They may suffer or die from DDT toxicity itself or from a combination of weakness and toxicity ("DDT and Nestling Birds," by George and Mitchell, *Journal of Economic Entomology*, December, 1947).

The Audubon Society is one of the few national groups that has been aroused about the continual killing off of our bird population. Their News Release of April, 1949 shows that 4.36 pounds of DDT to the acre, an amount often advising for airplane dusting had reduced the bird numbers to 50 per cent or less in six days. Write to them at 1000

HAVE FUN!

with Your Own OUTDOOR FIREPLACE

It's easy to build yourself! Just add masonry—to your choice of design—around one of these all-metal units and you have an outdoor fireplace that works right. Costs less! A true recreation spot—for family or guests—right in your own yard. Everyone loves to cook and eat outdoors! Choice of sizes and accessories available. See your dealer, or send check or money order

Model OF-28 Only $20.95
Size 21"x26"x13½"

THE MAJESTIC COMPANY
384 Erie St., Huntington, Indiana

56 Pages

DESIGN BOOK 25¢

WRITE FOR COPY TODAY

Earthworms . .

After years of breeding a more hardy Earthworm has been produced. It now can be placed directly in the soil without that fatal effect that the older type of Domesticated Earthworms were afflicted with. This NEW EARTHWORM will make it's home in your soil immediately.

This is the Earthworm you have been looking for.

300-400	Earthworms	$3.00
650-800	"	5.00
1000-1200	"	7.00

Prepaid East of Mississippi River, West thereof add 10%

Full instructions with order.

Write for our catalog on Organically Grown Plants and Bulbs

Organic Gardens Fullerton, Maryland

How To Charge Your Soil With **GROW POWER**

ActivO makes rich, activated compost-fertilizer quicker, better, easier, cheaper from waste . . leaves, garbage, etc. . . (reduces garbage without odor!)...Activates, conditions and sweetens soils...Many other uses. Organic. Bacterial. Odorless. Trial size for 425-lb. compost, No. 12676 $1., 1400 lb. size, No. 12677, $2.; 3 ton size, No. 12678M, with free plans for handy Composter Cabinet, $6.99. All prepaid.

MONTGOMERY WARD & COMPANY Catalogs

ROOT YOUR OWN CUTTINGS IN SAND

in a box, greenhouse, or Hotbed. Scientific instructions copyrighted. $1.00. It is easy in an amazingly short time to root cuttings of Camellias, Azaleas, Gardenias, Roses, Evergreens and other plants in sand, any time of the year, with our instructions. This information costs us thousands of dollars, and years of experience, and costs you only $1.00. Postpaid.

National Nurseries Dept. 22, Biloxi, Mississippi

Free Catalog on Camellias, Azaleas, Gardenias

QUALITY FRENCH PRUNES

Health food—unprocessed—tree run sizes—no chemicals or commercial fertilizers—full of sugar—distinctive flavor—larger and better—37½¢ per pound in minimum ten pound lots or more—charges **prepaid** anywhere in U. S. A.—no C.O.D.'s.

A. C. MARSH

926 Shannon Road Los Gatos, Calif.

Fifth Avenue, New York 28, N. Y. for more tests and wildlife and sprays.

Milk Contamination

Dairy animals, while not severely injured by DDT, will pass it in their milk. The chemical accumulates in the fatty portion of milk just as it does in the animal body. Whole milk and butter will then have more traces of it than skim milk products. Several parts per million is an average figure.

The dairy cow cannot help but pick up a good deal of DDT. Her silage is sprayed with it, the barns are fumigated many times in summer, and she is often treated with it directly. But even small quantities of spray can be dangerous. Carter and Mann (*Journal of Economic Entomology*, August, 1949) report that just one spraying of a dairy cow meant that about 1.3 parts per million of DDT appeared in the milk. The DDT continued to be found in the milk for five weeks.

Is such poisoned milk safe to drink over a period of years? We believe that it is not.

Goat milk is no safer than that from a cow. In an article labelled "DDT Spraying of Pasture can make Milk Poisonous," (*Science News Letter*, January 5, 1946), we find that rats fed DDT poisoned goat milk have a very short life span, and may be killed outright. There was even a transmission of the poison. Female rats fed the milk had their milk poisoned in turn, for their young died. Baby rats, as well as human infants react to smaller amounts of DDT.

Another bad effect of DDT on milk-producing animals was observed: milk flow stopped in poisoned goats in three to four weeks instead of the usual seven to ten months.

Aerosol Bombs and Kitchen Spraying

The careless use of DDT in the home can be one of the reasons for "virus X" attacks, says Dr. Morton S. Biskind (*American Journal of Psychotherapy*, Vol. 33, No. 2, April 1949). Housewives rarely protect themselves in any way while flitting the chemical indiscriminately. To prove the harm that can come from such spraying, Dr. Biskind exposed twenty-five patients with "virus X" symptoms to a DDT aerosol which is used to protect clothing from moths. In each case, within a few hours the patients began to cough and suffer from eye irritation, followed the next day by nausea, vomiting, and diarrhea. Some of the symptoms even stayed with them for several months.

(To be continued)

Let these three books start you off on the right path . . .

The Word Finder
by J. I. RODALE

A new invention in word-finding which *augments* the synonym book. It contains lists of hundreds of thousands of words. If you have a noun it finds an adjective or verb to go with it. If you have your verb it gives a suitable adverb to collaborate with it. It also indicates coupling words for adjectives. Miraculously transforms literary styles. 1350 double-column pages, thumb-indexed. **$6.50**

The Word Bank
by S. BASESCU

A new type of synonym book. Quickly helps you find the *right* word. Invaluable for building your vocabulary, 216 pages. **$3.00**

Short Story Writing
by F. ORLIN TREMAINE

Step-by-step guidance by popular editor and author. Includes complete short story with analysis. Adopted by U. of Vermont. 240 pages. **$2.75**

Postage prepaid when cash accompanies order.
RODALE PRESS, Dept. G-6, Emmaus, Pa.

GARDEN FERTILITY

Does your garden need the mellow organic fertility that nature produces when supplied with ample vegetation?

Hairy Vetch, a legume, and Balboa Rye, a cereal, seeded between rows this summer as your vegetables mature should provide an excellent winter hardy cover crop.

$1. brings the "Green Cover" package postpaid—1½ lbs. of Hairy Vetch and Balboa Rye seed (enough for the average small garden or a trial plot in the large garden) with proper inoculant and recommendations for sowing.

F. E. DeBerry, Box 310, Fort Scott, Kansas

THE ORIGINAL HYBRID "*SOILUTION*" EARTHWORM

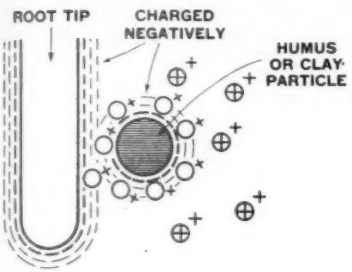
500 breeders—$6.00; 1000—$11.00; 3000—$25.00; 10,000—$70.00 . . . . Culture, ½ gal., —$5.50; 1 gal.,—$11.00.

Write for descriptive literature; instructions with each order.

Colorado Earthworm Hatchery
2134 Decatur Street Denver 11, Colorado

The Effects of Chemical Fertilizers

(*Continued from page* 40)



crop yields were very high and with increasing amounts of nitrogen supplied.

Q. Why will crops grown on land continually doped with artificial fertilizers often be deficient in trace elements?

A. To explain this principle will mean delving into a little physics and chemistry, but you will then easily see the unbalanced nutrition created in artificially fertilized plants. According to the diagram, the colloidal humus particles are the convoys that transfer most of the minerals from the soil solution to the root hairs. Each humus particle is negatively charged and will of course attract the positive elements such as potassium, sodium, calcium, magnesium, manganese, aluminum, boron, iron, copper, and other metals. When sodium nitrate, for instance, is dumped into the soil year after year in large doses, a radical change takes place on the humus particles. The very numerous sodium ions (atomic particles) will eventually crowd out the other ions, making them practically unavailable for plant use. The humus becomes coated with sodium, glutting the root hairs with the excess. Finally the plant is unable to pick up some of the minerals that it really needs.

Teeth and the Organic Method

(*Continued from page* 18)

longest. Much of its fertility may be farmed out of its soils. Erosion over long periods has depleted it of its best topsoils. Long-time use of chemical fertilizers has reduced its population of earthworms and beneficial bacteria. In the west the same process is going on, but the soils there are still closer to the virgin state than those of New England.

The last sentence quoted above is extremely interesting. It hints at a test of the organic method versus the chemical one. We have received letters from Tufts College with regard to their intention to do this very thing. It probably will not be long before it is set in motion.

To persons who reside in New England I would strongly suggest the taking of bone meal daily. Many medical tests have proven conclusively that it greatly aids in arresting the formation of cavities. See advertisements of bone meal in this issue. Our family has been taking it for over three years.

Order your copy today!

THE LIVING SOIL

by Lady Eve Balfour

A FRESH and valuable review of the principles that underlie the organic method, with special emphasis on the research linking food, health, and the soil.

Packed with striking data, fascinating to read. 270 pages; 38 photographs. **$4.00**

ORGANIC GARDENING, Box G6, Emmaus, Pa.

Friends of Organic Gardening

HELP THE ORGANIC MOVEMENT BY HANDING OUT FREE SUBSCRIPTION BOOKLETS

Organic Gardening is constantly striving to increase its subscription list. You can take an active part in this important program by handing out our subscription booklets to acquaintances in your community. **If you would like some extra money, this spare-time activity will return liberal commissions!** Through a coded coupon we can trace each subscription to your efforts. We will be glad to send you 25 or 50 booklets; state how many you want. Write to Organic Gardening, Dept. Q., Emmaus, Pa.

BONE ASH

Combined with other natural and organic vitamins and minerals.

Do you need a good multiple vitamin Formula? If so get the ORGANIC MINERAL—Natural Vitamin Kind. If you make efforts to eat only natural non-synthetic, unprocessed foods . . . go ALL THE WAY! Stop using synthetic vitamins and start using

V Complette 12
VITAMINS • MINERALS B-12

NATURAL and ORGANIC
Vitamin and Mineral Tablets

Contains a superior yeast for B Complex Vitamins and Trace Vitamins; Bone Ash for Calcium, Iron, Fluorine, Copper and other Trace Minerals; plus adequate potencies of Vitamins A, D, B-12, all natural.

60 tablets $2.50; 100—$3.90; 300—$9.90
At health food stores or postpaid direct.

SCHIFF BIO Dept. G-6, Jersey City 3, N. J.

WEAR THIS BUTTON!

Attractive bronze buttons with green enamel border—**the official emblem of organic gardeners.** Excellent for garden club members or for individual use. Price **50c.**

ORGANIC GARDENING, Box G6, Emmaus, Pa.

MIN – A – MARR
(MINERALS FROM SEA)

Send $1.00 for No. 1 Sample (Postpaid)
Price List Up to Carload

The $1.00 paid for Sample Applies on Future Larger Orders. 100 lbs. to Carload Order (Garden Clubbers)

SCOTCH ORGANIC SERVICE
P. O. B. 531 SANTA BARBARA, CALIF.

A Regenerated Garden

I have a good size garden plot which has been in continual use for more than one hundred years. For a long time, no doubt it had plenty of manure applied, then for many years the owners kept no animals but used chemical fertilizer. After I purchased the place I continued the use of chemicals for the same reason and for years all I had was sickly, inferior vegetables heavily infested with insects. I saw the advertisement for your magazine in 1944 and just out of idle curiosity subscribed for it with no idea of practicing composting. However, after reading a few copies I became convinced it was a common sense method and do not now use any chemicals and sprays.

From an old worn out garden completely devoid of earthworms and producing inferior vegetables I now have a new garden abounding with earthworms and producing crops which are a surprise and the envy of neighbors and have used no sprays or insecticides for four years. Outside of a few potato bugs which I take care of in a few minutes with a paddle and old basin I have no trouble from insects.

The potatoes I started with for seed were of the very poorest quality but have improved each year until now one could not ask or expect any further improvement in quantity or quality. I am firmly convinced organiculture is truly Nature's method and the way to better health.

H. B. Harris

THE FAMOUS KLOSS' HERB TREATMENT FOR CANCER

The complete herb formula with instructions are now available. Being used by a number of physicians, and can be carried out under the modification of your own physician.

Complete Formula and Instructions — $1.00

HEALTHWAYS
P. O. Box 993 La Jolla, California

Subscribe Today!

Organic Gardening

Gentlemen: Put me down for a Subscription for
1 Year–$3 ☐ 2 Years–$5 ☐ 3 Years–$7 ☐ 5 Years–$10.50 ☐
Lifetime Subscription–$35 ☐ and send me a bill.

Name_____

Address_____

_____

CUT OUT AND MAIL TO ORGANIC GARDENING, BOX G-6, EMMAUS, PA.

QUESTIONS AND ANSWERS

Compost Without Stable Manure

Stable manure is practically impossible for the small gardener to obtain at this time. On most farms (except dairy farms) the same problem applies, as the average farm of today is mechanized and doesn't even own horses or mules and in fact, no live stock for producing stable manure.

Your greatest problem, (and eventually your greatest victory) will be that of composting vegetable matter satisfactorily for use without fresh or dehydrated stable manure. We simply cannot get adequate supplies of stable manure at economic prices for this use. (Some parts of the country might supply this but the overall picture is dismal in this respect.)

Personally, I have done very well without stable manure. Vegetables and flowers are all taking prizes in growth, yield and beauty from compost produced without stable manure. I do not know how much better they might have been had I used stable manure in the break down or activation for the nitrogen content, etc., as I have not conducted comparative tests yet.

Q. Can a good grade of compost be made without fresh manure?

A. Yes, a high grade of compost can be made without stable manure. Earthworm manure, called castings, is available in all soils containing sufficient raw organic matter to serve them as food. Put earthworms in the compost heap and you will have an ample supply of manure for the compost. They not only supply the manure but also act as digesters and aerators in the heap. It is well also to use a good grade of activator when fresh manure is not available. An activator is a culture of organisms which insure a rapid break down of the organic materials and the synthesis of the products which make up humus and the humates.

Remineralize and Mulch

Q. I am a new reader and subscriber to *Organic Gardening.* I believe 100% in

Notice . . . .

RUHM'S

PHOSPHATE ROCK SOIL SERVICE

has taken over old Railway Express Co. office and L. I. R. R. freight house at Northport, L. I. where shipments of Ruhm's Phosphate Rock, America's great soil builder, will be made. Organic material such as carried by Soilservice of Townsend, Mass., will also be offered for sale.

Ruhm's Phosphate Rock, Soil Service,

Northport, L. I. or Townsend, Mass.

RED RICH

EVERBEARING STRAWBERRY

New, Outstanding, Delicious, Very Productive

Also Rockhill, Streamliner, Universities, Bonanza Red Raspberry, Kayberry, Olallie, etc.

Write for Free Descriptive Catalog, illustrated, partly in COLOR

Brentwood Berry Gardens

P.O. Box 14101, Los Angeles 49, California

BAMBOO PLANT STAKES

Tough, wiry, long-lasting BAMBOO 4-ft. lengths. Dyed green. A real garden necessity. Protect your flowers from wind and storm. Bundle of 100 only $2.98 postpaid.

FARGO'S Dept. 14 FRENCHTOWN, N. J.

DWARF SIBERIAN KALE

Organically grown seed. Order now from Blake Farm Seeds. Price One Dollar per pound, postpaid. Send check or money order (No stamps please). Descriptive folder of this vitamin rich food and soil, improving plant mailed with each order.

BLAKE FARM SEEDS

P. O. Box 1601 Cincinnati 1, Ohio

THE Organic FARMER

tells you HOW! New Crops, New Growing Techniques, New Farming Devices. Personal experiences of practical farmers who are making the Organic Method PAY! Don't miss out! Mail your subscription to **THE ORGANIC FARMER** NOW!

One year (12 issues) $3. Two years $5. Three years $7. Five years $10.50. SEND NO MONEY. Just indicate your choice on a postcard, print your name and address; bill will follow. Address:

The Organic Farmer, Box G6, Emmaus, Pa.

Organic Packet

Enlarge Your Organic Know-How With These 10 Tempting Booklets

THE DOCTOR'S ATTITUDE TOWARD FERTILIZERS. What they think of the organic method. Contains a transcript from a U. S. Senate Hearing. **60c**

MANUAL OF ORGANIC MATERIALS. A Comprehensive List of Compostible Materials Occurring in the Home and in Industry. This book alphabetically lists 85 substances that may be used to keep the soil fertile in Nature's way. It defines the composition of each material and what each substance contributes in plant nutrients to the soil. . . . **50c**

THE WAR IN THE SOIL by Sir Albert Howard, C.I.E., M.A. A magnificent summary of the organic cause for those who desire to change to home-made organic fertilizer. . **80c**

QUICK-RETURN METHOD OF COMPOST-MAKING by Maye E. Bruce. New ideas for producing compost WITH OR WITHOUT animal manure. **$1.00**

THE FORMATION OF VEGETABLE MOLD THROUGH THE ACTION OF WORMS by Charles Darwin. Contains the most important parts of his classic on the earthworm, with other articles. **60c**

OUR FRIEND THE EARTHWORM by George S. Oliver. Deals with the importance of the earthworm to gardening. Truly a friend to man. **$1.00**

QUESTIONS AND ANSWERS ON COMPOST edited by J. I. Rodale and Heinrich Meyer. A guide for compost-making. . . . **35c**

COMPOST—HOW TO MAKE IT edited by J. I. Rodale. The only book of its kind ever published. **35c**

DEBATES IN HOUSE OF LORDS. Deals with the advisability of forming a Royal Commission to check on the Sir Albert Howard method of farming. **45c**

THE ORGANIC METHOD ON THE FARM by J. I. Rodale. Large-scale composting; odorless, laborless chicken-house; field crops and orchards. Describes new organic method. **$1.00**

Total value **$6.65**

☛ Booklets may be purchased individually at the above prices. But **if you order the entire packet you pay ONLY $5.32, a saving of 20%!**

Postage prepaid when cash accompanies order.
Send for complete list and special bargain offers.

ORGANIC GARDENING, Box G6, Emmaus, Pa.

HUMIX

A peat material rich in organic matter a natural product — unprocessed

Analysis:		Price list — f.o.b. White Haven
5.10	pH	Bulk—$9.00 per ton
30	Nitrates	
13	Potassium	100 lb. cotton bags $1.75
94%	Organic	50 lb. " " 1.20
1.5	Phosphorus	25 lb. " " .85
9	Soluble Salts	

BLUE RIDGE SOIL PEP CO., Inc.
White Haven, Pa.

Say:

"I saw it advertised in Organic Gardening."

the organic method and I want to try it out to a letter.

I have about an acre (a strip of freshly cleared clay land 100 by 400 ft.) just recently set in various kinds of apple, peach, pear, plums, figs, apricots, cherries, 41 grapevines, 7 varieties, 100 young and boysenberries, thornless; 800 strawberries, and will plant vegetables as the season permits.

We are in the southern part of the apple belt and I don't want my trees to get stunted as I have some of the best, so would like the advice of some of the experienced fruit and garden experts. I dug large holes for all my trees and filled them with rich woods soil and top soil from immediate hole and around it. We blasted out most all stumps and cut the place pretty well with heavy bush and hog harrow.

I would like to be registered as an organic orchardist and gardener and will gladly exchange ideas and experiences with anyone wishing to do so.

What treatment should the soil be given in which these fruits are growing?

A. It is safe to assume that the soil is deficient in one or more of the essential nutrient elements. To remedy this condition, add pulverized phosphate rock and a finely pulverized potash rock, each at the rate of from one-half to one ton per acre. These materials should be concentrated around the plants in the form of a ring extending out as far as the drip line. Nitrogen and organic matter can be provided by growing a cover crop of legumes. The cover crop should be cut several times a year and the plant material left on the soil as a mulch. Or the organic matter may be added in the form of compost at the rate of about five tons per acre, the compost then to be covered by a mulch of shredded plant materials to a thickness of 6 to 8 inches. If sufficient compost and mulch are not available to cover all the ground, they may be applied around the individual trees in the form of a doughnut, i.e. a hollow ring.

According to the Pennsylvania State Experiment Station, mulched vegetables outyield clean cultivated crops, prevent erosion, conserve moisture in the soil, and enrich the soil in humus. Mulched vegetables like mulched bush and tree fruits are richer in vitamins than cultivated crops.

Pumpkins

Q. How should I prepare the soil for growing pumpkins successfully? I planted the seed in a shovelful of compost and had wonderfully thrifty plants with vines from

Rates are 21¢ a word (18¢ a word for 3 or more months using same copy). Minimum 25 words, or $5.25. Payable in advance. Include name and address in word count. (Deduct 15% from total rates, for Help or Positions Wanted Ads.)

FLOWERS

LEARN TO RAISE AZALEAS SUCCESSFULLY; send 25¢ to **AZALEA GARDENS, 199 S. Barksdale St., Memphis, Tenn.** Largest Mid-South.

AFRICAN VIOLETS—All popular outstanding varieties. 75¢ each, 10 for $7.00 P.Pd. Plants chosen from a stock of 100,000. Free catalog. Visitors welcome. **TINARI FLORAL GARDENS, Bethayres, Penna.**

BULBS FROM HOLLAND. Our catalogue offering hundreds of varieties of TULIPS, DAFFODILS, HYACINTHS, CROCUS, etc. will be sent on application. **J. HEEMSKERK, c/o P. VAN DEURSEN, Sassenheim, Holland.**

DELPHINIUMS—new color, double pink, rose and others; also choice Primroses. Seedplant catalog free. **OFFERMAN DELPHINIUM GARDENS, 4709 W. Stevens, Seattle 6, Washington.**

DWARF WATER HYACINTHS. For rock garden pool, fish pond or aquarium, multiply rapidly, no soil needed, tall lavender blooms. Six for $1.00 prepaid. **A. J. WYLIE, 109 West North St., Tampa, Fla.**

HIGHLIGHTS IN IRIS—Hundreds varieties of the best and latest. All types and species. Hemerocallis, Peonies, Perennials. Catalog Free. **IMPERIAL IRIS GARDENS, Cornell, Illinois.**

EXCITING JUNE BARGAINS IN BARNHAVEN'S world-famous hardy silver-dollar PRIMROSES. Ideal time to plant. Write for equally famous catalog and note collections page 32. **BARNHAVEN, Gresham, Oregon.**

AFRICAN VIOLETS bloom continuously when planted in SANLODEB. Plant foods or repotting will not be necessary for 3 years. 3 lbs., $1.00 postpaid. $1.15 west of Mississippi River. 30¢ lb. for each lb. over 3 lbs. **S. E. DEBERRY, 611 So. Main St., Washington, Pa.**

IRIS—DAYLILIES. We offer as usual the finest. Vigorous one year old hybrid plants. Beautiful flowers. Easily grown. Catalog on request. **ELMHERST GARDENS, 3128 N. Muscatel, San Gabriel, California.**

IRIS—Grand Color Mixture, 10 Dwarfs no two alike, unlabeled $1.00 or 40 Tall Bearded (2 each of 20 varieties) unlabeled $2.00 Postpaid. Free flower catalog. **SALINA FLOWER FARMS, Box 539G, Salina, Kansas.**

NURSERY STOCK

10—1 YEAR AZALEAS, all different, red, pink, white and purple. $3.00. Blooming size plants 50¢ each. **BUCKINGHAM NURSERY, Buckingham, Pa.**

BABY EVERGREENS—SEEDLINGS—TRANSPLANTS—SEEDS. Azalea-Rhododendron Hybrids. All Northern-grown Bulbs. Free Catalog. **GIRARD BROS. NURSERY, Geneva, Ohio.**

GROW YOUR OWN HOLLY TREES. 40 Seeds $1.00. 1 year old plants $1.75. No C.O.D. **SNEL'S HOLLY FARM, Staten Island 9, New York.**

STRAWBERRY AND RASPBERRY plants. Hardy, Northern Grown. Fresh dug. Fourteen varieties, including New Century. Write for prices. **MCNEAL BERRY NURSERY, Hamilton, Montana.**

GARDEN EQUIPMENT

STOP STOOPING. Weed easily. Save whole weekends. Find the real pleasure in gardening. Send for free illustrated circular. **KRAMER COMPANY, Dept. 15, Enumclaw, Washington.**

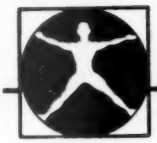
BOOKS & PUBLICATIONS

FREE BOOK—"505 Odd Successful Businesses." Work home! Expect something Odd! **PACIFIC OG-5IA, Oceanside, California.**

HAVE YOU read "NATURE'S WAY TO HEALTH—Juice Therapy" by Arthur W. Snyder? For a limited period—this valuable booklet will be sent FREE upon request. **ESSENTIAL FOODS, 216 West Jackson Blvd., Chicago 6, Illinois.**

"MIRACLES OF MENTAL ACTION EXPLAINED." Learn Psycho-Dynamics—Wonder Science. Tremendous Value. Price $1.00. SATISFACTION GUARANTEED. **SCIENTIFIC INFORMATION SERVICE, 2259 Houghton Ave., SE, New York City 61.**

Cancer?



CAN IT BE PREVENTED

By J. I. RODALE

The 13 articles which ran in recent issues of *Organic Gardening* have now been collected into handy booklet form. Here are the startling facts on how cancer is caused and how it may be prevented.

Buy a copy for permanent reference—give copies to your cherished friends. 96 pp. **50 cents**

ORGANIC GARDENING, Box G6, Emmaus, Pa.

Life Subscription

You can receive **ORGANIC GARDENING** regularly — every month, **for the rest of your life** — by taking a Life Subscription at $35. **You need send no money** — simply print your name and address, and mail in; we will send you a bill.

Name .....

Address .....

ORGANIC GARDENING, Box G6, Emmaus, Pa.

BANK BY MAIL *at the*

FIRST NATIONAL BANK in BANGOR, PA.

WHICH IS THE DEPOSITORY OF ORGANIC GARDENING MAGAZINE
We Solicit Mail Depositors From Any State—Savings or Checking Accounts
Deposits Guaranteed by the Federal Deposit Insurance Corporation

Write for complete information to

FIRST NATIONAL BANK, BANGOR, PA.

Strictly LILIES

Get the world's most complete lily catalog! Illustrated in color. Send 25c (coin) for your copy TODAY.

ROMAINE B. WARE BOX O CANBY, ORE.

Illustrated Catalogue RARE health books. SCARCE books located! "The Cause of Disease" free! Illustrated book catalogue. ANY BOOK LOCATED! **WILBORN, Box 461-OG, Pasadena 18, California.**

EARTHWORMS

"EARTHWORMS: PROPAGATION & USE," "NEWS," many valuable circulars descriptive 17 years' experience. All-time low prices—Start with proven successful methods. Write NOW. **CALDWELL, Barwick, Georgia.**

"DAVID'S FOLLY" EARTHWORMS will build topsoil for your gardens, lawns, and trees. **"DAVID'S FOLLY" EARTHWORM FARM, West Brooksville, Maine.** Free Folder.

DR. OLIVER'S Hybrid EARTHWORMS $2.50 per 500 Prepaid. Our aim—Satisfied Customers. Instructions Free. **KEYSTONE EARTHWORM HATCHERY, 223 N. 30th St., Harrisburg, Pennsylvania.**

DR. OLIVER'S SOILUTION WORMS. Hand picked Breeders. Very active. 100—$1.00; 500—$3.00; 1000—$5.50; 5000—$25.00. Live delivery Guaranteed. Prepaid. **WIZARD WORM RANCH, Donalsonville, Ga.**

SHORT OF HELP? Blind, naked, and toothless though my workers be, they will for you add, subtract and multiply—add soil fertility, subtract human labor, and multiply production. Start organic gardening and farming with expert topsoil workers, red EARTHWORMS, $4.00—1000; $3.50 5000 up. **WIGGLE WORM WORKS, Somerville, Tennessee.**

FERTILIZE YOUR GARDEN NATURE'S WAY. Raise Earthworms. Information Sent With Orders. Shipped Direct From Our Farm in Maryland. $7.00 Per 1000; **JAMES VETTRAINO, 5826 Harding, Detroit 13, Mich.**

HARDY EARTHWORMS raised in outdoor pits. Hand Picked, counted and packed with food for two weeks. Live delivery guaranteed. Write for prices. **FLOYD WICKELL, Mt. Sterling, Ohio.**

MODEL BOX SETUP, including 700 mature SOILUTION earthworms, capsules and culture, $7.00. **Prepaid.** FINE FOR BEGINNERS. Instructions. Phone AC 10705. **NATURE'S SOIL BUILDERS, 1344 Spring Garden, Lakewood, Ohio.**

FISH WORMS—Grow your own by our simple method at small cost. Complete book of instructions, illustrated. Shows you how. Postpaid $1.00. Descriptive literature free. **HUGHES WORM RANCH, Savannah, Tennessee.**

HYBRID EARTHWORMS from outdoor Open Pits. Healthy Active. $4.50 per 1000 Delivered. Instructions. **"DAVID'S ORGANIC GARDENS," Box 407, Washington, Missouri.**

BUILD BETTER SOIL with nature's own soil conditioners. Iowabred Earthworms will do the job. Orders now filled for adult worms. **IOWA EARTHWORM HATCHERY, Council Bluffs, Iowa.**

EARTHMASTER SYSTEM for earthworm breeding. Successful methods developed by author of "Harnessing the Earthworm." Valuable information bulletins mailed free. **EARTHMASTER SYSTEM, Dept. 24, El Monte, Calif.**

EARTHWORMS turn your leaves and grass cuttings into valuable fertilizer (compost). $4 per thousand. Visitors welcome. See model compost box. **MYRTLE KESSINGER, 1210 Eighth Ave., Arcadia, California.**

EARTHWORMS at WHOLESALE—5000 or 100,000—Very lowest prices. BOOKLET, and free plans of ALL WEATHER WORM HOUSE mailed. **WM. BARNARD, 2121 Vanderbilt Lane, Redondo Beach, Calif. (Dept. O.G.).**

RED WIGGLERS for fishing, EARTHWORMS make pest resistant lawns, flowers, vegetables, fruits. **HARDING-IVES, 136 Whitehall Rd., Albany, N. Y.** Folder free.

EARTHWORMS: Hardy Oliver Strain—fertilizer builders and soil cultivators. Investment grows continually. Dividends certain. Write **KEMPER LANE HATCHERY, 2324 Kemper Lane, Cincinnati 6, Ohio.**

RED "SOILUTION" BREEDERS—hand picked, 500—$3.00, 1000—$5.00, 2500—$12.00. Instructions included. Prompt shipments, postpaid. **EASTERN EARTHWORM HATCHERY, 80 William Street, Englewood, N. J.**

GARDENERS: Impregnate that compost heap with 300 Domesticated Earthworm Hybrid egg-capsules (hatch 1200 worms)—$2.00; complete instructions. **MIDWEST EARTHWORM FARMS, Box 999-K, Wichita 1, Kansas.**

"APRIL SHOWERS BRING MAY FLOWERS" but thereon you have to work. Let our domesticated earthworms do it for you. **VIRGINIA EARTHWORM FARM, Rt. 4, Roanoke, Va.**

EARTHWORMS—For garden and farm—no greater soil builder—makes quicker and better compost—write for folder and reduced prices. **ROMAC EARTHWORM FARM, Box 375, Ashland, Ohio.**

OZARK HYBRID WORMS. Ready to enrich your gardens, for better fishing. 500—$2.00; 1000—$3.50 Postpaid. Live delivery guaranteed. Instructions free. **HOBSON'S WORM RANCH, Mountain Home, Ark.**

ENGLISH HYBRIDS, Very Productive. 500—$2.50; 1000—$4.00. Wholesale Prices On Request. **S. PESTA, 3807 E. 78th Street, Cleveland 5, Ohio.**

six to ten feet long but without pumpkins. Some of the plants were infested with borers.

A. It takes more than compost and organic matter to grow plants successfully in soils which are badly depleted. Evidently your soil is deficient in some of the essential minerals. In preparing the soil for pumpkins, dig a hole as large as a bushel basket. Put in the bottom a six-inch layer of some partly composted organic matter. Cover this with a layer of compost of equal depth. Then fill the hole with a mixture of equal parts of soil and compost to which 5 pounds of phosphate rock and 5 pounds of potash mineral has been added. Plant the seeds when all danger of frost is over.

Pumpkins produce male flowers first and then female flowers nearer the end of the vines. The male flowers produce pollen which must be transferred to the pistils of the female flowers if the pumpkins are to develop. Perhaps your vines were not properly pollinated. This work is usually done by bees, but can be done by you with a small brush. If you have no bees in your garden, do the work of pollination yourself.

Mulches

Q. From a recent article appearing in *Let's Live* magazine published in Los Angeles, the following two paragraphs are quoted:

"In testing various mulching materials it was found that when seeds of Chewing's fescue grass were sown between plant rows, it produced the same effect as a good manure mulch, at considerably less expense.

"Sown at the rate of three pounds to 100 square feet, this grass makes a thick growth, the report says. Chewing's fescue is used because it withstands shade cast by the plants. Toward fall the grass dies out. Crop production is said to be as good as when any other mulching material is used, and the cost is less."

Mrs. A. D. Tousley

A. If sufficient moisture is available, the growing of the Chewing fescue cover crop is an excellent practice. Otherwise, use a mulch of finely shredded plant materials. Shredded straw will not blow out of place, and will absorb and hold more moisture than the unshredded material.

False Sunflower Seeds

Q. A few days ago I sent you a photograph of my two experimental sunflowers.

Yesterday I mounted a ladder to examine the seeds. You never saw a finer head of seed in your life. Nearly 18 inches across and filled with huge seeds that would make your mouth water. They were all large, dry and mature, and so I picked one out for the organic taste I had been so long anticipating.

Woe is me—it had no kernel—another proved to be just as hollow, and so on through over two quarts of seeds from each head—no kernels.

I called the county agent here, and he had no answer, excepting that I might have bought a seed that was intentionally grown to not reproduce.

I am not conversant with the sunflower from a biological point of view and do not know whether there are both male and female plants or whether the individual plants are both sexes.

I do not like to bother you with this problem which should be very simple, but I do not seem to be able to find anyone here who knows anything about sunflowers.

Leon C. Murdock
1981 Gulf to Bay
Clearwater, Florida

A. Your false sunflower seeds are doubtless the result of lack of pollination. This is only an indication of what you may expect when commercial poisonous sprays have wiped out the bees and other insects which do the pollinating of flowers and fruit trees.

Investment Opportunity

Do You Want An Active Part In The Rapidly Mushrooming Organic-Gardening Supply Business?

A principal of one of the leading manufacturers of gardening supplies is being forced to retire because of ill health. His majority interest is available to the right person or group—or to a company if it is in a position to guarantee continuance of the business on the same high plane as now. Reply in confidence to

ORGANIC GARDENING
Box MA, 46 S. West St. Allentown, Pa.

"WORM MAGIC" for spring soil and health rejuvenation. Our hybrid earthworms turn your compost fast. Order now. **GEM CITY WORM RANCH, 241 Lexington, Dayton, Ohio.**

DOMESTICATED EARTHWORMS—Send 10¢ for Instruction Sheets and our latest price list. The best in Earthworms, Culture, Castings. **EBWOOD EARTHWORM HATCHERY, Box 63, Amherst, Wisconsin.**

SOLD HATCHERY and disposing of entire stock of HYBRID BREEDERS at $4.50 per 1,000 prepaid. Live delivery guaranteed. **SOULE HATCHERY, RFD Box 211 AA, Oceanside, Calif.**

FERTILIZERS—SOIL CONDITIONERS

ARROW BRAND ROCK PHOSPHATE for New England. Any quantity. Contains trace elements. Finely ground. Write for more information. **E. SALAMANDRA, 328 Paddock Ave., Meriden, Conn.**

HEALTH CONDUCING Colloidal Minerals for soil or compost culture. Over twenty elements. None toxic. Nutrition from the ground up. **"BRABON" RESEARCH for HEALTH, Telford, Pennsylvania.**

NATURAL ROCK PHOSPHATE—Finely ground from high test Western phosphate rock. Ideal for Organic farming and gardening. **WESTERN FARM CHEMICAL COMPANY, Box 217, Walnut Grove, California.** (Distributed in Southern California by Plant Food Corporation, 3711 Medford Street, Los Angeles 33, California.)

RUHM'S PHOSPHATE ROCK good for soil and for earthworm, and for livestock. Try it! **H. F. SCOTT, Domville. Grenville County, Ont., Canada.**

CINCINNATI, Ohio, RUHM'S PHOSPHATE ROCK Glauconite Potash Mineral, Frazer Compost, Dolomite Limestone. Price on request. **FRED A. VEITH, 3505 Mozart Ave., Cincinnati 11, Ohio.**

ATTENTION—North Shore Organic Gardeners. We can supply ActivO, Rock Phosphate, Rock Potash, Dolomite, and Nutr-Soil. **BORCHARDT FUEL CO., Highland Park, 2-0067. Quantity deliveries Evanston to Waukegan, Illinois.**

HOOVER'S COLLOIDAL and KAYLORITE (GLAUCONITE MARL)—For Nebraska and Iowa—Colloidal contains 10 major and 11 trace elements; Kaylorite—18 major, 30 trace elements. Build rather than stimulate soils. **HESPER SOIL SERVICE, 1638 D Street, Fremont, Nebraska.**

SOIL TEST

AT LAST—THE PROVEN SURE WAY TO LARGER, MORE ABUNDANT FRUITS, VEGETABLES and other CROPS. A card to **SOIL TEST, 5832 20 St., N. Arlington, Virginia for full information.**

SOIL ANALYSIS SERVICE

LET US ANALYZE YOUR STONE DUST, LIMESTONE, GRANITE, WORM CASTINGS OR OTHER FINDINGS. **SOIL ANALYSIS SERVICE, 5832 20 St., No. Arlington, Virginia.**

PLANTS

SWEET POTATO PLANTS. Nancy Hall and Porto Ricos 200—$1.00; 500—$1.75; 1000—$3.00. Bunch Porto Rican Yams, (vineless type). 200—$2.00; 500—$3.50; 1000—$4.50 PREPAID. **J. D. DELLINGER, Gleason, Tenn.**

FOODS

PURIFIED BONE MEAL (For Human Consumption) An amazing nutritional substance known for its Natural CALCIUM PHOSPHORUS, FLUORINE and numerous trace minerals essential to health as occur in selected beef bones. We offer quality Bone Meal in Various forms: 1-lb. Bulk Powder $1.50; 3-lbs. $4.00; — 300 7-Grain Capsules $3.00;—1000 Capsules $8.00;—300 1-Gram Wafer-tablets $2.50; 1000 Wafer Tablets $6.00; 300—7½ Grain tablets with Vitamin D $2.00; 1000 Tablets $5.00. Postage Prepaid. Send orders to **NU-AGE PRODUCTS, 1926 W. Railroad Street, Loupurex, Penna. Dept. O. G.**

HONEY: Delicious Florida orange blossom 2½ pounds postage paid $1.00, 10 lbs. postage paid $3.75. **NELSON L. WHEELER, St. Cloud, Florida.**

DELICIOUS VITAMINE CANDY BARS no sugar. Honey, Dates, Cocoanut, Wheat Germ rice polish. Ready to serve Vita cereal, Almond meal, Cocoanut Dates, Wheat flakes. Also 4 grain cereal, all the grain with above added. Stone ground W.Wheat flour. Soy. Corn meal also Organic W.Wheat, Unbleached White. Send for folder. **NATURAL GRAIN MILL, 1317 S. Central, Lodi, California.**

KATAHDIN POTATOES, high quality, organically grown. Delicious prepared for table in any method you prefer $5.00 bushel, express collect. **NORMAN H. STARK, R.R., Thiensville, Wisconsin.**

NATURAL VITAMINS AT SAVINGS—Vitamin A, 25,000 unit capsules, 100—$1.65. VITAMIN B-12 tablets, 5 mcg., $1.50 per 100. BREWERS YEAST TABLETS, 1000—$1.75. WHEAT GERM OIL CAPSULES, 500—$2.75. RICE POLISH TABLETS, 100—95¢. IODINE RATION TABLETS, 300—$1.25. BONE MEAL TABLETS, 100—$1.00. **BARTH'S, Box 718, Woodmere, New York.**

CLOVER HONEY FROM THE NATURALLY FERTILE PASTURES of Northern Illinois. 1950 crop. 5 lb. pail strained honey $1.40 postpaid. 5 lb. beautiful comb $2.00 postpaid. **WETZ HONEY FARMS, Waterman, Illinois.**

PURE OLD FASHIONED CIDER VINEGAR. Made from unsprayed apples, aged many months in oak casks, producing pure fine flavored, organic vinegar. 12-½ Pint glass jars—$4.50 Prepaid. **SALTMARSH'S CIDER MILL, New Boston, New Hampshire.**

CLEVELAND, OHIO AREA. ORGANICALLY GROWN STRAWBERRIES, SWEET CORN, asparagus, peas, and other vegetables. Picked fresh to order. Phone Jackson 6-7355 **F. WYMAN, 7881 Brecksvill Rd., Brecksvill, Ohio.**

BUSINESS OPPORTUNITIES

FABULOUS EARNINGS—Fascinating pastime. Growing Genuine, living miniature (Ming) Trees. New sensational Business or Hobby. Astounding information FREE. **DWARF GARDENS, Box 355Y, Briggs Station, Los Angeles 48, California.**

FREE BOOK "505 Odd, Successful Businesses." $250 Week reported! Work home. Expect something Odd! **PACIFIC, Oceanside, 50A, California.**

For information about MELBOURNE VILLAGE, a planned community of productive homes and creative living, with special emphasis on Organic Gardening. Write **AMERICAN HOMESTEADING FOUNDATION, Box 696, Melbourne, Florida.**

WOOLENS

TAILORED TO YOUR MEASURE: sport jackets, topcoats, suits, capes, kilts; in your choice of AVOCA HAND-WOVEN IRISH TWEEDS or AUTHENTIC CLAN TARTANS. Also by the yard. Throws and blankets too. **CAROL BROWN, Putney 39, Vermont.**

COMPOST AS YOU WANT IT

- SCREENED
- SHREDDED
- GROUND
- MIXED
- PILED

Rocks, trash separated. Grinds manure and tough organic matter through rolling screens, wet or dry. Screens soil fine as wanted through perforated screens. Free compost circular.

Dept. B

W-W GRINDER CORP. WICHITA, KANSAS

Prevention magazine

DON'T miss the special *Polio* issue of J. I. Rodale's new health magazine.

Prevention *is the newest concept in health publications. While it is based completely on authoritative research, only findings of a truly preventive character are used. Every issue contains amazing surprises, demolishing scores of harmful fallacies affecting our daily living.*

A year's subscription is $3, two years $5, three years $7, five years $10.50. *You need send no money*—jot your choice on a postcard and you will be billed. Write to:

Prevention, Box G-6, Emmaus, Pa.

FOR SALE

FOR SALE, slightly used **ROLLE HANDY WORKER.** $125.00. **ST. JOSEPH'S ACADEMY, 314 Houston Ave., Crookston, Minnesota**

MONEY MAKING ACTIVITIES

FREE Book "372 unusual Worldwide Businesses." Australia, South America. Wartime Plans! $800 month reported. Beat inflation. Start spare time. Work home (U. S. A.)! Get surprise. **PUBLISHERS—OG 80 Carlsbad, California.**

VACATIONING

JOURNEY'S END, Lake Wilson, Hillsdale, Michigan. Modern Lakefront Cabins. Organically raised fruits and vegetables sold to guests.

THE BIRCHES—GHENT—NEW YORK—Open all year Accommodations for ten guests. Rates $40 weekly—$7 daily. Week-end guests and hunting parties catered to. All vegetables, fruits and berries are organically grown on premises—all other available organically grown foods are used in kitchen. Descriptive folder upon request.

ORGANIC TRADING POST

WHOLE WHEAT FLOUR! Where can you find its equal at anywhere near the price? Check these features, which we can claim for all our grains. Strictly organically raised (mostly by ourselves), 100%, stone-ground, untreated with preservatives, mailed to you the day it is ground. Free recipes and baking instructions upon request. Wheat flour, buckwheat flour, cornmeal, soybean flour, muffin meal, wheat cereal, samp cereal and soy grits. All priced the same—5 lbs. 70¢; 15 lbs. $2.05; 25 lbs. $3.00; 100 lbs. $10.00. Postage extra (100 lbs. sent freight collect). **PAUL KEENE, Walnut Acres, Penns Creek, Pa.**

RAISINS DIRECT FROM GROWER! Organically grown, natural, sundried, unsalted, sweet, seedless, unsulfured, unsprayed, unoiled, unfumigated. 5 lbs. $2.00; additional at 30¢ lb., PREPAID; NO C.O.D.'s; **GILBERT'S, Sultana, California**

ORGANICALLY GROWN WHEAT processed into 100% whole wheat and cereal containing all the original vitamins and mineral salts of the wheat berry. Trial 5 lb. bags of flour or cereal sent postpaid for $1.00. **LOU-HELEN RANCH, Davison, Michigan.**

KATAHDIN POTATOES, high quality, organically grown. Delicious prepared for table in any method you prefer. $5.00 bushel, express collect. **NORMAN H. STARK, R.R., Thiensville, Wisconsin**

ORGANIC WHOLE-WHEAT OR RYE FLOUR now 15¢ lb. plus postage. Grain 10¢ lb. or $8 for 100 lbs., freight charges collect. **STARLAND ORGANIC FARM, Whitenack Rd., Basking Ridge, N. J.**

FEDERATION WHEAT, ORGANICALLY GROWN in rich foothills of Palouse Country. When ground for bread, cereal or pastry we believe its flavor cannot be surpassed. 120 lb. bags shipped freight prepaid. East of Mississippi $2.00. **ROBINSON BROS., R. 3, Shelton Rd., Walla Walla, Washington.**

SHIPPING NOW! Why buy inferior vegetables when we can supply premium produce at fair prices. **GERICKE'S ORGANIC FARM, 2876 Arthur Kill Road, Staten Island 9, New York.**

POSITIONS WANTED

POSITION WANTED BY HIGH SCHOOL GIRL GRADUATE, in connection with any phase of Organiculture—preferably in the South. **MARILYN L. KIEFER, Box 94, San Antonio, Florida.**

POSITION WANTED — as RANCH MANAGER experienced in diversified farming and compost vegetable growing. **ORGANIC GARDENING, Box ME, 46 S. West St., Allentown, Pennsylvania.**

MISCELLANEOUS

CESSPOOLS, SEPTIC TANKS, etc., cleaned and deodorized by application of miracle fermentation. Comes in pellet form. Reduces masses, opens clogged drains, cesspools, etc. Saves annual pumping and cleaning costs. Costs $2.50 per treatment. Shipped parcel post anywhere in U. S. Manufactured and sold by **ELECTRIC SEWER CLEANING CO., 294 Lincoln Street, Allston 34, Mass.**

ROTARY POPCORN POPPER—A large bowl of delicious Popcorn in three minutes. $1.50; Postpaid. Money back guarantee. **CLINTON KEAGY, New Castle, Penna.**

BUILD YOUR OWN HOME COMPOSTER. Instruction. 50 cents to **LEE MACHINE WORKS, 301 North Park Street, East Orange, New Jersey.**

A $100-a-MONTH HOBBY AT HOME! No soliciting, no mail order, no meeting people. Easy enjoyable pastime. Details, 25¢ (Refundable). **LAURA DICKSON, 1006-GC, Elizabeth Street, Anderson, South Carolina.**

TODDLERS FROCKS — Hand-smocked — Ginghams and Chambrays, Eyelet Trimmed; Sheer Cottons (Batiste and Dotted Swiss) Lace Trimmed $4.50. Hand-made BABY SETS—Sacque (Pompadour Design), Bootee and Helmet or Bonnet $4.95. Set of Penguin Wool, intricate design $5.95. **MARGARET RILLING, Brattleboro, Vt.**

JUNE IS FOR BRIDES

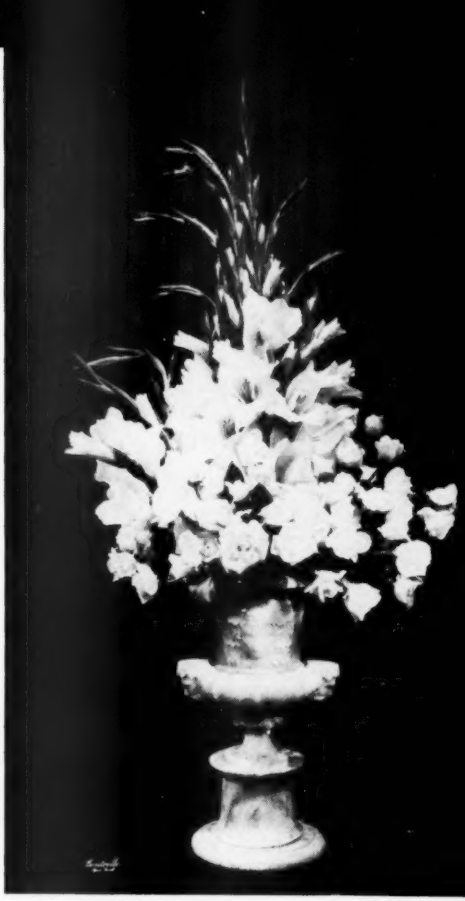
ANN ANDREWS RODALE

THE tall vertical arrangement in the beautifully carved alabaster urn has the eggshell color and satin texture of a bridal gown. A separate container must be used to hold water, such as glass or metal. Alabaster is not waterproof, but very elegant.

The June bride is synonymous with roses. Gladiolus fill in as secondary material. It is a flower with many personalities, adjustable to almost any type of arrangement, whether modern or period.

It is best to pick them when the first bloom opens. Trim the outer cover of the other buds to expose the color and to encourage new buds to open.

The formal bridal dinner table centerpiece should remain a low, horizontal type. Mrs. Clark of the Garden Club of America has created a charming one, which is applicable for a Southern bridal table. The cluster of camellias holds the center of interest, while flowers and foliage cascade from the container, adding the optical illusion of height.



Boutrelle

Arranged by Mrs. E. A. White

Boutrelle

Arranged by Mrs. B. Clark

WEEDS ARE A BLESSING!

When you cultivate with the amazing new ROTO-MILLER attachment!

NOW—This Revolutionary New Garden Tractor Attachment POWER COMPOSTS Weeds, Cover Crops, Mulch Material, Leaves, etc., into Rich, Natural Organic Fertilizer—Right in Your Garden Itself!

THIS Summer and through late Fall, you can enrich your garden—restore poor land—actually build lots of rich new topsoil—if you have the Model T ROTO-ETTE with Roto-Miller Attachment! This great new invention makes possible POWER COMPOSTING of weeds, leaves, green manure cover crops, even garbage —*right in your garden soil itself!*

Louis Bromfield, distinguished author and owner of the famous MALABAR FARM, is shown operating his ROTO-ETTE. "The gardens here have never produced so much or such healthy crops," writes Mr. Bromfield. "ROTO-ETTE has contributed an enormous amount."

HERE'S HOW YOU DO IT:

1. You don't just "cultivate"—You POWER COMPOST your weeds! ROTO-MILLER makes weeds a blessing. You ROTO-MILL them into your soil—chop and mix them in where they hold moisture, provide ideal food for earthworms and microbial life. You don't have to cultivate as often, either. ROTO-MILLER is unbreakable; reduces tangling to a minimum. Weeds a foot high or more are all the better to ROTO-MILL into your soil.

2. POWER COMPOST COVER CROPS All Summer Long! With ROTO-MILLER you never leave a bare spot in your garden. You grow **winter, spring, summer, and fall cover crops**—ROTO-MILL them into your soil and restore poor land. You buy far less fertilizer, save the cost of the machine in this way alone!

3. POWER COMPOST GARBAGE! Let an earthworm be your garbage man! Use ROTO-MILLER to turn daily waste into one of the richest fertilizers. You'll be amazed how this really makes things GROW!

4. POWER COMPOST LEAVES! With ROTO-MILLER you'll never have to burn another leaf! It's easy to spread leaves over your garden. ROTO-MILL them into your soil—turn waste into something of real value!

NEW ROTO-MILLER IS THE SECRET

The secret of the ROTO-ETTE'S remarkable performance is the Roto-Miller, shown at right, which can even chop standing cornstalks into your soil! It is the proof—almost tangible—of unbreakable. Read about it in the FREE BOOK.

PATENT PENDING

TILLS, CULTIVATES, COMPOSTS — All Without Change of Attachment

Not only does this amazing Model T ROTO-ETTE power compost—it takes the place of plow, disc, and harrow—prepares your soil for planting *ALL IN ONE SIMPLE OPERATION!*

And ROTO-ETTE *does other yard and garden jobs too!* A simple change of attachment converts it to a power lawn mower; power snow plow (or bulldozer); power scythe; power buck rake; power saw, etc. And the cost is so low that many gardeners are able to pay for it out of one season's crops!

Send for FREE 68-Page Book

We can't begin to tell you all about the Model T ROTO-ETTE here—so why not sit right down and mail us the coupon for a FREE copy of *POWER GARDENING and POWER COMPOSTING*, by Ed Robinson, author of the famous "Have-More Plan." This 68-page, picture-packed book tells how ROTO-ETTE works — how easy it is to service — how it does a day's work in an hour — details on prices, attachments, etc. Send for your copy TODAY! Address: Rototiller, Inc., Dept. 76, Troy, New York.

ROTO-ETTE
Reg. U. S. Pat. Off.

ROTOTILLER, INC., Dept. 76,
TROY, NEW YORK

Please send me FREE by return mail a copy of POWER GARDENING and POWER COMPOSTING by Ed Robinson, author of the famous "Have-More Plan." I enclose 10 cents in stamps or coin to cover postage and handling.

Your Name .....

Address .....

City ..... State .....

☐ Check here to get information about becoming a Rototiller Dealer, giving present business affiliation, references, etc. A few good territories are still open.